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FRANCIS BACON

The Great Instauration: Proœmium, Preface, Plan of the Work, and Novum Organum

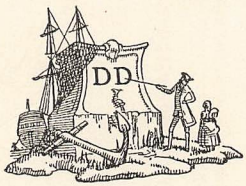
THOMAS HOBBES

Leviathan

JOHN LOCKE

An Essay Concerning Human Understanding

Edited by Gail Kennedy, Ph.D.
Assistant Professor of Philosophy, Amherst College



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FIRST EDITION

PREFACE

The selections from the writings of Bacon which appear in this volume are taken from the edition of his *Works* by Spedding, Ellis and Heath, London, 1858; the selections from Hobbes' *Leviathan* are from the Molesworth edition, London, 1841; and those from Locke's *Essay* are from the edition by J. A. St. John, London, 1854. Brackets, following A. C. Fraser's edition of the *Essay,* are used to indicate amendments made by Locke in the second, third and fourth editions published during his life. In some cases, the section titles in Fraser's edition have been substituted for those in St. John. Omissions are shown by dots, and, in the case of entire chapters or sections, are also indicated by the Table of Contents. Footnotes placed in brackets are by the editor.

In each instance of an important omission I have endeavored to preserve the continuity of the argument, despite the brevity of these selections, by appending a note indicating or summarizing the omitted material. In the interest of accuracy, and to prevent the intrusion of an alien idiom, I have tried to make the summaries, as far as possible, by means of quotation rather than paraphrase.

Dr. Philip Wheelwright, editor of the series in which this volume appears, has given me valuable suggestions and criticisms.

G. K.

of trade and plantations, an office which he held from 1696 to 1700.

Locke was fifty-seven years old when he returned to England in 1689 and, except for the articles contributed to the *Bibliothèque Universelle,* he had published nothing. Now he released in rapid succession a whole series of works for the press, the greater number of which appeared anonymously. The first of these, his *Epistola de Tolerantia,* appeared in Holland in 1689 and a little later in the same year in an English translation by William Popple. Controversies over this work occasioned a *Second Letter* and a *Third Letter* in 1690 and 1692 respectively. In 1690 Locke also published his *Two Treatises of Government,* and *The Essay Concerning Human Understanding.* All of these works, and particularly the *Essay,* had an immediate success.

In 1691 Locke, who had weak lungs and was a chronic sufferer from asthma, felt that he could no longer endure the smoky atmosphere of London, and retired from the city to live at Oates in the family of his close friends Sir Francis and Lady Masham. Here he spent an idyllic old age, engaged in study and writing, receiving the visits of distinguished friends and admirers, such as Newton and Molyneux, and occasionally paying visits to London. In these last fourteen years he several times enlarged and revised the *Essay,* in successive editions—especially the second edition of 1694 and the fourth of 1700—replied to some of his many critics, notably to Edward Stillingfleet, Bishop of Worcester, who charged that the "new way of ideas" would subvert faith and morals, and composed a number of other minor works dealing with economic, philosophical, and religious questions. He died at the age of seventy-two, at Oates.

We have seen that the *Essay* originated in the difficulties that Locke and his friends fell into when discussing "the principles of morality and revealed religion." Locke then hit upon the idea that before such questions could be profitably treated it was necessary first "to examine our own abilities, and see what *objects* our understandings were, or were

last, in a retirement where an attendance on my health gave me leisure, it was brought into that order thou now seest it."[1] In the composition of the work Locke almost wholly ignored, with the exception of Descartes, the views of other writers, being resolved "to examine humane understanding, and the ways of knowledge, not by others' opinions, but by what I could from my own observations collect myself."[2]

In 1675 Shaftesbury fell from power and Locke was set free to retire to France in search of health. There he resided nearly four years, for the most part at Montpellier. During these years he made a good deal of progress with the *Essay,* but he "thought too well of it to let it then go out of his hands," and it was another decade before he at last had it ready for publication.

Locke returned to London, and to Shaftesbury's service, in 1679. He spent the next four years in the midst of a turmoil of intrigues and plots. Shaftesbury, after again enjoying power for a short while, espoused the cause of the pretender Monmouth, and, after the arrest of Monmouth, was forced to flee to Holland, where he died in 1682. Locke's close connection with Shaftesbury brought him under suspicion. Fearful of his safety he also sought refuge in Holland. In his exile he formed particular friendships with the liberal theologian, Limborch, and with Le Clerc, editor of the *Bibliothèque Universelle,* the chief literary and critical journal of its time in Europe. Locke contributed several articles to this journal, the last of them being an epitome in French of the *Essay.*

The Glorious Revolution of 1688 reversed Locke's fortunes. He returned to England in the fleet that brought over the Princess of Orange. The new government offered him various posts, several of which he declined because of weak health, and that he might have leisure for study and writing. But he did accept certain positions which would not take up all of his time, the most important being that of commissioner

[1] *Essay,* Epistle to the Reader.

[2] B. Rand, *The Correspondence of John Locke and Edward Clarke* (1927), pp. 28–29.

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PHILIP WHEELWRIGHT, PH.D.
General Editor

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INTRODUCTION

The seventeenth century was the focal period, in Western Europe, of that vast slow revolution in the climate of opinion which constitutes the shift from medieval culture to our modern age. During the two previous centuries the great medieval synthesis had been slowly breaking down: the feudal order was being supplanted by new national states, for the most part under strongly centralized monarchies; the guild system was being undermined by the growth of rapidly expanding commercial, industrial, and colonial enterprise; the manorial system of agriculture was giving way to individual farming, carried on by a class of peasant proprietors or independent yeomen; Catholic 'Christendom' was splitting up into a host of rival sects and 'churches'; there was a revival of interest in Greek and Roman art and literature, with a concomitant growth of naturalism and humanism in the arts, and a rapid development of national literatures written in the vernacular; and, finally, philosophy, emancipating itself from the domination of tradition and ecclesiastical authority, was laying the foundations for the development of modern science, thus precipitating the greatest revolution in thought and practice in the history of mankind.

During the fourteenth and fifteenth centuries men's energies were largely absorbed in the negative task of criticism and revolt, in freeing themselves from medieval ideas and institutions. But by the seventeenth century the need for a constructive synthesis had become imperative. The response to this social need was a great efflorescence of creative genius, expressing itself in the arts, in science, and in philosophy. Philosophy was confronted with fundamental problems produced by that totally new conception of the nature of the

world which was emerging from the development of modern science. A new theory of method, and a new cosmology which would square with the practice and results of modern science, and the application of this new method to questions of morals, politics, and religion had to be worked out. The result was a series of great philosophical systems, paralleling and interpreting the scientific movement. Beside the names of Kepler, Galileo, Huygens, Harvey, Boyle, and Newton we can set those of Bacon, Descartes, Hobbes, Spinoza, Locke, and Leibniz. Descartes, Spinoza, and Leibniz formulated comprehensive rationalist systems; Bacon, Hobbes, and Locke laid the foundations of modern empiricism. Together these thinkers set the problems and determined the general trend for the whole subsequent development of modern philosophy.

FRANCIS BACON

Francis Bacon (1561–1626) was the youngest son of Sir Nicholas Bacon, Lord Keeper of the Great Seal under Elizabeth. Little is known of his early life. At thirteen he was sent to Trinity College, Cambridge, where he acquired a strong dislike of the decadent scholasticism at that time professed in the Universities. Destined for a career in the public service, he was sent to France, when sixteen years of age, in the suite of Sir Amyas Paulet, the ambassador, to acquire a knowledge at first hand of politics and diplomacy. Here he remained until 1579, when the sudden death of his father ruined all his expectations and left him, without means or influence, to make a way for himself at court. Bacon turned to the study of law, hoping by this avenue eventually to attain some important office in the government. He became a barrister and entered Parliament, where he quickly achieved a leading position.

Meanwhile Bacon was also carrying on his philosophical studies. He had an extraordinary capacity for uniting intellectual pursuits with practical activity. Throughout his

career there runs a clear duality of interest. In one of the many letters to his powerful uncle, Lord Burghley, canvasing for some preferment at court, he says, "Lastly, I confess that I have as vast contemplative ends, as I have moderate civil ends; for I have taken all knowledge to be my province; and if I could purge it of two sorts of rovers, whereof the one with frivolous disputations, confutations, and verbosities, the other with blind experiments and auricular traditions and impostures, hath committed so many spoils, I hope I should bring in industrious observations, grounded conclusions, and profitable inventions and discoveries; the best state of that province."[1] Throughout a life preoccupied with legal and political business Bacon persistently worked toward the realization of this great intellectual project.

Under Elizabeth, Bacon's efforts to establish himself in office met with continual frustration. Although he was appointed one of the Queen's Council and his legal abilities were made use of, he never received an office that carried with it financial gain, or important responsibilities. His only reward was the reversion of an office in the Star Chamber for which he had to wait a full twenty years. With the accession of James matters mended. He was made Solicitor-General in 1607, Attorney-General in 1613, Privy Councillor in 1616, Lord Keeper in 1617 and Lord Chancellor in 1618. In that year he was created Baron Verulam, and in 1621 Viscount St. Albans.

During these crowded years Bacon had not allowed his intellectual interests to lapse. In 1597 he published the first edition of his *Essays*. This little book, a minor classic of English literature, he enlarged and amended in the subsequent editions of 1612 and 1625. In the *Essays* Bacon condensed in pregnant aphorisms his shrewd, coolly detached, and realistic reflections on men and their manners. In 1605 he published his first philosophical work, *The Twoo Bookes of Francis Bacon on the Proficience and Advancement of Learning Divine and Humane*. The book was addressed to the King in

[1] J. Spedding, *Life and Letters*, Vol. I, pp. 108–109.

the hope of enlisting the royal patronage for his ambitious project of a *Great Instauration* or *Renovation of the Sciences.* It presents the first part of the total plan, a comprehensive classification and inventory of the existing sciences which would indicate their deficiencies and suggest means for their renovation. Then, in 1620, he brought out his greatest work, the *Novum Organum, sive Indicia Vera de interpretatione naturae.* This book, the second part of the project, is an exposition of the new method, by which arts and sciences will be created to attain a command over nature hitherto unknown.

Bacon was now (1620) at the height of his career. He had attained the highest public office to which he might aspire and he had made substantial progress in the realization of his ambitious intellectual program. Then came his sudden and totally unexpected fall. Charges of bribery and corruption in the exercise of his judicial office were preferred against him in the Commons under the instigation of Coke and other enemies who were eager to topple him from his eminence. The case was sent to the House of Lords for trial. Bacon made his submission and was convicted, though it was not shown that the 'presents' which he had received from suitors had in any way affected his judgments. Bacon himself expressed the essential truth of the affair: "I was the justest judge that was in England these fifty years, but it was the justest judgment that was in Parliament these two hundred years."

Expelled from public life, Bacon, like Cicero, turned to the consolations of literature and philosophy. During the last five years of his life he composed his *History of Henry the VII,* a masterpiece of historical writing, made an extended Latin translation of the *Advancement of Learning* as the *De Augmentis Scientiarum,* and composed a number of fragments intended for the latter parts of his *Great Instauration.*

In a fragment, written probably about 1603, the *De interpretatione naturae proœmium,* Bacon sets forth his qualifications for the accomplishment of his great project: "I found

that I was fitted for nothing so well as for the study of Truth; as having a mind nimble and versatile enough to catch the resemblances of things (which is the chief point), and at the same time steady enough to fix and distinguish their subtler differences; as being gifted by nature with desire to seek, patience to doubt, fondness to meditate, slowness to assert, readiness to consider, carefulness to dispose and set in order; and as being a man that neither affects what is new nor admits what is old, and that hates every kind of imposture. So I thought my nature had a kind of familiarity and relationship with Truth."[1]

The *Great Instauration,* as Bacon planned it, falls into six parts: The first was to be a comprehensive division and analysis of the existing sciences, so worked out as to point the way to the discovery of new knowledge. This part is fulfilled by the *De Augmentis.* The second was to point out the defects of the existing methods in the sciences and to give a full description and detailed illustration of the new method, by means of which one might effect "a total reconstruction of sciences, arts, and all human knowledge, raised upon the proper foundations."[2] This exposition of the new method is partially accomplished in the *Novum Organum.* The third was to consist of a new kind of natural history: *The Phenomena of the Universe, or a Natural and Experimental History for the foundation of philosophy.* This was to be a collection of data drawn from observation and experiment which would serve as the materials from which, by the new method of induction, laws might be derived. Only a beginning exists, a *Historia Ventorum, Historia Vitae et Mortis* and fragments of several other histories. The fourth was to consist of a number of completed examples of the method, so selected as to serve for models in all the various fields of inquiry. This part Bacon called *The Ladder of the Intellect.* Only the preface for it was written. The fifth was to be the

[1] *Works,* iii, p. 520. Here quoted from W. R. Sorley: "History of English Philosophy" (1920), pp. 18–19.

[2] *Works,* viii, p. 18.

Forerunners, or Anticipations of the New Philosophy. This was to consist of the tentative and partial results of the new method so far as Bacon had been able at the time to arrive at them. The incomplete investigation of the phenomena of heat, used to illustrate his method in the second part of the *Novum Organum,* is probably an instance of what Bacon had in mind for this collection of *Anticipations.* Only a preface exists. The sixth and last part Bacon called *The New Philosophy, or Active Science.* It was to consist of the completed system of sciences firmly based on the organized data of Part III and constructed by the methods of Part II. Here again a preface is extant, but the accomplishment of this final work is to be left to posterity.

When we survey Bacon's scheme as a whole, it seems to us today singularly pretentious and unreal, a half completed monument to the ambition and vainglory, the high imagination and inveterate optimism, of his age. Certainly he merited Harvey's jibe that he wrote philosophy like a lord chancellor. Bacon's conception of the methods of science is a curious mixture of crudity and insight. He had very little practical sense as to how scientific observation and experimentation are actually carried on. His own attempts at concrete scientific research were generally inept and ill-conceived. And he uniformly failed to recognize the significance of the actual scientific work accomplished by such men as Copernicus, Kepler, Galileo, Gilbert, and Harvey. He condemned the work of Copernicus as that of a man "who thinks nothing of introducing fictions of any kind into nature, provided his calculations turn out well"; whereas Gilbert's researches on magnetism were equally damned for relying exclusively on the use of experiment. One man was in Bacon's language a 'rationalist,' the other a mere 'empiricist'.[1] Bacon thought that his method would reduce scientific research to a purely routine procedure of collecting facts and generalizing from them, thus putting all minds, as it were, on a level; and he

[1] *Cf. Novum Organum,* Aph. LXII–LXXI.

believed that by the institution of a properly organized corps of research workers his natural history of the *Phenomena of the Universe* might be completed in a few years and the whole task of science finished in a generation.[1] His fear of 'anticipations' of nature led him to misunderstand the vital role that hypothesis plays in scientific enquiry, and while he points out the importance of mathematics as a method of exact measurement,[2] his own ignorance of the subject prevented him from perceiving that the basic function of mathematics in science is its use as an instrument for the development of hypothesis.

These are the crudities and defects in Bacon's philosophy of science. They are due to the circumstance that he was a pioneer in the field, writing at the very beginning of the scientific movement, and to his own amateurishness in the actual practice of scientific research. But his merits are equally real. His discussion of the four *Idols,* of the *Tribe,* of the *Cave,* of the *Market Place* and of the *Theatre,* constitutes a profound analysis of those sources of error and prejudice that, unless precautions are taken against them, will vitiate all enquiry. He accurately defined the objective of scientific knowledge (although the method he devised was inadequate) to be the discovery of 'forms' in nature. By 'forms' he meant "those laws and determinations of absolute actuality, which govern and constitute any simple nature, as heat, light, weight, in every kind of matter and subject that is susceptible of them. Thus the Form of Heat or the Form of Light is the same thing as the Law of Heat or the Law of Light." Knowing the 'form' of a given quality or nature the means now lies within our power to produce that nature. "On a given body to generate and superinduce a new nature or new natures, is the work and aim of Human Power. Of a given nature to discover the form, . . . is the work and aim of Human Knowledge." "From the discovery of Forms therefore results truth in speculation and freedom in operation."[3]

[1] *Works,* viii, p. 355.

[2] *Works,* viii, p. 365, and *Novum Organum,* Part II, Aph. VIII.

[3] *Novum Organum,* Part II, Aph. XVII, I, III.

Finally, he was the most clairvoyant and eloquent prophet, in that age, of the material and moral consequences of the new scientific movement. Bacon believed that he saw the means of inaugurating a greater socialization of human life, and he described it poetically in his *New Atlantis,* practically in his life work, *The Great Instauration.* It was an old truth that men will band in packs to hunt a common quarry, and he saw a new means of utilizing it. Let men know that by co-operative effort they can subdue the forces of nature to their desires and create abundance, then, being no longer rivals, they may live in amity and understanding. That, Bacon clearly saw, was the true import of the new science: "the knowledge of causes, and the secret motions of things; and the enlarging of the bounds of human empire, to the effecting of all things possible."[1]

THOMAS HOBBES

Thomas Hobbes (1588–1679) was the second son of a country vicar who "was one of the ignorant Sr. Johns of Q. Elizabeth's time, could only read the prayers of the church, and the homilies; and valued not learning, as not knowing the sweetness of it."[2] An uncle, a well-to-do tradesman, provided for Hobbes' education. Hobbes proved such a good scholar "that before he went to the University, he had turned Euripidis Medea out of Greeke into Latin Iambiques, which he presented to his master."[3] At fourteen he entered Oxford. Here he conceived the same distaste that Bacon had contracted at Cambridge for the scholastic fare offered. "He did not much care for logick, yet he learned it, and thought himself a good disputant."[4] His chief recreations were to snare

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[1] *New Atlantis,* World's Classics ed., p. 265.

[2] Aubrey's *Life of Hobbes:* here cited from the reprint in F. J. E. Woodbridge, "The Philosophy of Hobbes" (1903), p. ix.

[3] *Ibid.,* p. xi.

[4] *Ibid.,* p. xii.

jackdaws and to visit bookshops where he would "lye gaping on mappes."

On leaving the University Hobbes became tutor and companion to the son of Lord Cavendish, afterwards the first Earl of Devonshire. This connection with the Cavendish family was to endure, with some interruptions, for the rest of his life. With his pupil Hobbes made the grand tour in 1610, visiting France, Germany, and Italy. On their return Hobbes continued as secretary to the young lord. The duties were light and Hobbes devoted himself to classical studies. He made a translation of Thucydides, published in 1628. It was also during this period that Hobbes served Bacon occasionally as an amanuensis, and translated some of Bacon's essays into Latin. But at the time Hobbes' interest in philosophy had not awakened, and there is no trace of Bacon's influence in his subsequent writings.

In 1628 Hobbes' friend and patron, the second Earl, died. Hobbes then became tutor to the son of Sir Gervase Clifton with whom he made a second tour of the continent. But in 1631 Hobbes was recalled to England to take charge of the education of the third Earl of Devonshire, his former patron's son. It was somewhere about this time that two significant incidents occurred which started Hobbes on his philosophical career. The first is recounted by Aubrey: "He was forty yeares old before he looked on geometry, w'ch happened accidentally; being in a gentleman's library in . . . Euclid's Elements lay open, and it was the 47 Prop. Lib. I. So he reads the proposition, 'By G—,' says he, 'this is impossible!' So he reads the demonstration of it, w'ch referred him back to another, w'ch he also read, et sic deinceps, that at last he was demonstratively convinced of that truth. This made him in love with geometry."[1]

The second incident was a conversation among learned men at which the question arose, "What is sensation?" Puzzling over this Hobbes came to the conclusion that the

[1] *Ibid.*, p. xiii.

only cause of change in all bodies, including organic bodies, is motion, and that therefore sensation must be a mode of motion. There exists a *Short Tract on First Principles,* probably dating about the year 1630, in which Hobbes adopts the geometric order of demonstration as his method, and uses the conception of mechanical causality as his basic principle of explanation.[1] From this time forth his dominant interest lies in the formulation of a comprehensive materialistic system.

In 1634 Hobbes made a third trip abroad, with the young Earl. By this time he was coming to be known as a philosopher. In Italy he visited Galileo, for whom he had conceived the greatest admiration, and in Paris he became a member of the famous society of philosophers and scientists which had its center in the cell of the Abbé Mersenne.

On his return to England in 1637 Hobbes became increasingly preoccupied with the political issues of the time, so that "for ten yeares together his thoughts were much, or almost altogether unhinged from the mathematiques; but chiefly intent on his 'De Cive,' and after that on his 'Leviathan,' w'ch was a great putt-back to his mathematicall improvement."[2] Hobbes clearly foresaw that if the quarrel between King and Parliament continued as it was going it would result in a ruinous civil war. The only remedy for civil disorder, in his opinion, was the persuasion of men to a truly scientific comprehension of the principles of sound government. Hobbes was therefore impelled prematurely to give out his psychology and political philosophy. The first expression of his views on this subject was a little treatise entitled *The Elements of Law* (1640). He says that "of this treatise, though not printed, many gentlemen had copies, which occasioned much talk of the author: and had not his majesty dissolved the parliament, it had brought him into danger of his life."[3] Frightened, Hobbes fled to the Conti-

[1] *Cf.* Hobbes, *Elements of Law,* ed. Tönnies (1889), pp. 193–210.

[2] Aubrey, *loc. cit.,* p. xiv.

[3] *English Works,* iv, p. 414.

nent, where he remained for the next eleven years. This period of exile was the most productive of his life. He now had a complete philosophical system. It was his intention to present it in three parts, dealing in due order with physics, psychology, and politics. But the disorders of the time, the country being "boiling hot with questions concerning the rights of dominion, and the obedience due from subjects, the true forerunners of an approaching war," "ripened and plucked" from him the last part first.[1] This was the *De Cive,* a remodelled version of the second half of his unpublished manuscript, the *Elements of Law,* which appeared in 1642. Hobbes also, on Mersenne's invitation, composed his objections to Descartes' *Meditationes,* at that time being circulated in manuscript. These appeared, together with Descartes' replies, as the third set of objections when the book was published. But most notably this was the time in which he wrote *Leviathan.* Aubrey has given us an account of Hobbes' method in composing his masterpiece: "the manner of writing of which booke was thus. He walked much and contemplated, and he had in the head of his cane a pen and ink-horne, carried always a note-booke in his pocket, and as soon as a thought darted, he presently entered it into his booke, or otherwise might have lost it. He had drawne the designe of the booke into chapters, &c. he knew whereabouts it would come in. Thus that booke was made."[2]

Through the influence of the Cavendish family Hobbes was appointed mathematical tutor to the young Prince of Wales. But the publication of *Leviathan* in 1651 aroused much resentment in the exiled court. The royalists disliked Hobbes' doctrine, despite his defense of absolute sovereignty, because it entirely put aside any notion of divine right and explicitly advised submission to a *de facto* government; and the exiled clergy were equally antagonized by his heterodox attempt completely to subordinate church to state. Hobbes therefore

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[1]*Ibid.,* ii, p. xx.

[2]Aubrey, *loc. cit.,* p. xv.

began to think of returning to England. At the end of 1651 he made his submission to the Council of State and went home.

Hobbes now devoted himself to the completion of his system. The first part, *De Corpore,* appeared in 1655 and the second, *De Homine,* in 1658. His life task was completed, but the old man, (he was now sixty-nine) still had some twenty-three years of incessant activity before him. Most of his energy during these years was wasted in attempting to breast the storm of controversy that his works aroused. In one of these controversies, with Bishop Bramhall over the freedom of the will, he acquitted himself notably, but in another encounter he was not so fortunate. Hobbes, who had come late to mathematics and was self-trained in the subject, fell into the conceit that he at last had squared the circle. This claim was demolished by the Savilian professors of mathematics at Oxford, Seth Ward and John Wallis. But the more Hobbes was proved wrong, the more obstinately he renewed the fight, countering pamphlet with pamphlet until he was ninety years old. During these latter years the indefatigable old man found time to compose a number of other books and tracts, among them his *Behemoth: the History of the Causes of the Civil Wars of England.* In his extreme old age he reverted to his original interest in the classics, translating both the *Iliad* and the *Odyssey* into rhymed quatrains, and amusing himself by writing his autobiography in Latin verse. In 1675 he retired from London to the seat of the Cavendish family in Hardwick. There he died in 1679.

Hobbes' philosophy is the most thoroughgoing attempt in the century to generalize the mechanical viewpoint of the new science and to apply it without restriction to everything in nature. Descartes, his great contemporary, starting out with the same general intention, compromised with tradition by bifurcating nature into the two isolate realms of *res extensa* and *res cogitans,* thus putting a barrier up against the intrusion of the new scientific method into the field of the specifically human. Hobbes, on the contrary, contends that

a *res cogitans,* a non-material substance, is a contradiction in terms, whatever exists must be a material body in motion, and the only mode of explanation is in terms of efficient or mechanical causality.

He is therefore committed to the attempt to show how man himself and human institutions can also be explained in terms of Galileo's new science of motion. Hobbes thought of himself as doing for psychology and politics what Galileo had done for physics, sweeping away tradition and establishing these sciences on a new foundation. Thus he was the first philosopher to assert and apply the thesis of 'physicalism,' that all of our knowledge, whatever, of events in nature can (theoretically) be stated in terms of the language of the physical sciences.[1] This meant, for Hobbes, that the explanation of every matter of fact must be in terms of mechanical causation. Accordingly, he defines philosophy as "the knowledge acquired by reasoning, from the manner of the generation of any thing, to the properties: or from the properties, to some possible way of generation of the same; to the end to be able to produce, as far as matter, and human force permit, such effects, as human life requireth . . . By which definition it is evident, that we are not to account as any part thereof, that original knowledge called experience, in which consisteth prudence: because it is not attained by reasoning, but found as well in brute beasts, as in man; and is but a memory of successions of events in times past, wherein the omission of every little circumstance altering the effect, frustrateth the expectation of the most prudent: whereas nothing is produced by reasoning aright, but general, eternal, and immutable truth."[2]

This knowledge we get, not by observation and experiment, as Bacon thought, "since experience concludeth nothing uni-

[1]A distinguished group of contemporary philosophers, the 'logical positivists,' are today attempting to corroborate this thesis in detail. For a brief statement of their position see R. Carnap, *Philosophy and Logical Syntax* (1935).

[2]*Leviathan,* ch. XLVI.

versally," but by extending the method of geometry and by proceeding from axioms and definitions to the deduction of ulterior propositions. Hobbes is here again following Galileo in setting forth this ideal of a systematic mathematical formulation and development of all scientific knowledge. The outlines of such a completed system he attempted in his three Latin treatises, *De Corpore* (1655), *De Homine* (1658), *De Cive* (1642).

Hobbes' physics is of merely historical interest, but in his logic, psychology, and politics he made contributions of permanent importance. Logic, in consonance with the mathematico-mechanical ideal which dominates all of his thinking, he defines as what we would today call general semantics, the science of operating with signs. These signs, generally words, are marks arbitrarily assigned to denote our thoughts. Reason, dealing with these marks or signs, can perform various operations upon them; these are always of the nature of computation: "For REASON, in this sense, is nothing but *reckoning,* that is adding and subtracting, of the consequences of general names agreed upon for the *marking* and *signifying* of our thoughts; I say *marking* them when we reckon by ourselves, and *signifying,* when we demonstrate or approve our reckonings to other men."[1] On this basis Hobbes attempts to work out a purely extensional theory which will bring logic into line with mathematics.

In psychology he follows the same mechanistic procedure. All psychological phenomena originate in sense. "The cause of sense, is the external body, or object, which presseth the organ proper to each sense, either immediately, as in the taste and touch; or mediately, as in seeing, hearing, and smelling; which pressure, by the mediation of the nerves, and other strings and membranes of the body, continued inwards to the brain and heart, causeth there a resistance, or counter-pressure, or endeavor of the heart to deliver itself, which endeavor, because *outward,* seemeth to be some matter with-

[1] *Op. cit.,* ch. V.

out. And this *seeming,* or *fancy,* is that which men call *sense;* and consisteth, as to the eye, in a *light,* or *color figured;* to the ear, in a *sound;* to the nostril, in an *odor;* to the tongue and palate, in a *savor;* and to the rest of the body, in *heat, cold, hardness, softness,* and such other qualities as we discern by *feeling.* All which qualities, called *sensible,* are in the object, that causeth them, but so many several motions of the matter, by which it presseth our organs diversely. Neither in us that are pressed, are they any thing else, but divers motions; for motion produceth nothing but motion . . . So that sense, in all cases, is nothing else but original fancy, caused, as I have said, by the pressure, that is, by the motion, of external things upon our eyes, ears, and other organs thereunto ordained."[1]

These motions continuing, though with diminished force, within the organism produce imagination which "therefore is nothing *but decaying sense.*"[2] Fancies, or imaginations, have a consequence or succession, one to another, of which Hobbes distinguishes two sorts, those which are *"unguided, without design,* and inconstant," and those which are *"regulated* by some desire, and design." The course of the first sort of consequences or train of imaginations can be determined, Hobbes perceived, by what came later to be called the laws of association of ideas, the second by our perception of causal relations. Such perception of consequence Hobbes calls understanding. But what guides and regulates the individual's activities is always some "passionate thought," and the ruling passion in all individuals is "a perpetual and restless desire of power after power, that ceaseth only in death."

Upon this conception of the human individual as essentially selfish, motivated by the desire to attain security for himself and power over others, Hobbes directly bases his political theory. The natural state of man being that of a war of all against all in which men are approximately equal, one's life therein is "solitary, poor, nasty, brutish, and short."

[1] *Ibid.,* ch. I.

[2] *Ibid.,* ch. II.

In this state each man has a natural right to everything, there can be no security for any man; and, therefore, while reason tells us that it is the fundamental *law* of nature *"to seek peace and follow it,"* yet it is also the sum of the *right* of nature *"by all means we can, to defend ourselves."*[1] While the "laws of nature oblige *in foro interno;* that is to say, they bind to a desire they should take place," they do not, in the state of nature, oblige *"in foro externo;* that is, to the putting them in act," since there exists no power that can enforce them. "For he that should be modest, and tractable, and perform all he promises, in such time, and place, where no man else should do so, should but make himself a prey to others, and procure his own certain ruin, contrary to the ground of all laws of nature, which tend to nature's preservation."[2] The only way out of this impasse is the institution of a neutral power which will force all men equally to obey the law of nature. And the sole means of establishing such a common power is for men "to confer all their power and strength upon one man, or upon one assembly of men, that may reduce all their wills by plurality of voices unto one will . . . This done, the multitude so united in one person, is called a COMMONWEALTH, in Latin CIVITAS. This is the generation of that great LEVIATHAN, or rather to speak more reverently, of that *mortal god,* to which we owe under the *immortal God,* our peace and defense."[3]

Hobbes' thesis, then, is that sovereignty by its very nature must be indivisible and unlimited. The Sovereign is indeed a mortal god. Hobbes was writing at a time when sedition and civil war were commonly defended by appeals to a law of nature, or to an original contract which was supposed to limit the power of the Sovereign.[4] He neatly turns the tables

[1] *Op. cit.,* ch. XIV.

[2] *Ibid.,* ch. XV.

[3] *Ibid.,* ch. XVII.

[4] For example, Milton in a pamphlet, "The Tenure of Kings and Magistrates," argues that Charles I had broken his compact with the people, and thus absolved them from obedience to his commands.

on the proponents of such doctrine by showing that the laws of nature are only binding when they are also the commands of the Sovereign, and that the very nature of the original compact must be such that the Sovereign, not being himself a party to it, has absolute power, and cannot be held to any obligation.

There remains one other excuse for sedition, and in Hobbes' opinion the most important one. In a letter written in 1641 he says "I am sure that experience teaches thus much, that the dispute for [precedence] between the spiritual and the civil power has of late, more than anything in the world, been the cause of civil wars in all places of Christendom."[1] Hobbes deals with this cause at length, devoting the entire last half of the *Leviathan* to proving that, since it is the prerogative of the Sovereign to determine what is right and what is wrong in all matters of conduct having public concern, he must have an unlimited power to regulate and govern all religious bodies within the state.

While much of what Hobbes wrote on politics, and even on psychology, is obviously colored by the political and religious dissensions amid which he lived, yet his intention was to make exact sciences of these subjects, and it was his hope that *Leviathan* might one time or other fall into the hands of a Sovereign who would "convert this truth of speculation into the utility of practice."[2]

But Hobbes' brilliant and often profound, though premature and narrowly conceived, attempt to formulate a complete synthesis of the sciences on the basis of a mechanistic view of nature, while it aroused a storm of protest, exerted but little constructive influence on any of his contemporaries, with the exception of Spinoza. The age was not yet ready for his intransigent naturalism; and it was obvious to his critics that this first attempt at synthesis did not have a basis in experience adequate to sustain it. Hence it was reserved for Descartes and Locke, who endeavored to find some mode

[1]Quoted from G. C. Robertson, *Hobbes,* p. 55.

[2]*Ibid.,* ch. XXXI.

of compromise that would 'reconcile' the implications of the new view of nature with traditional moral and religious values, to set the tone for eighteenth century thought. Yet Hobbes' philosophy definitely forecast the ultimate objective of modern empiricism: as the various experimental sciences have progressively disclosed the details of the structure of nature it has become increasingly evident that the primary task of an empirical philosophy is to carry out on a broader and more comprehensive basis the uncompromising naturalistic synthesis that Hobbes first attempted.

JOHN LOCKE

John Locke (1632–1704) was the son of a country attorney who commanded a troop of horse in the Parliamentary forces during the civil wars. Locke grew up during these disordered times: "I no sooner perceived myself in the world," he wrote long after, "than I found myself in a storm." But his education was uninterrupted, despite the chaotic condition of the country. He attended Westminster School, and in 1652 entered Christ Church, Oxford. In 1659 he was appointed to a studentship and, later, to a fellowship which he held until deprived of it, in 1684, by Charles II. During most of the first ten years of this period Locke was in residence at Oxford.

As a student at the University Locke felt the same dissatisfaction as Bacon and Hobbes before him with the traditional studies. Le Clerc, his friend and biographer, says "But altho' Mr. *Locke* had gain'd such a Reputation in the University, he has been often heard to say, of the first Years of his being there, that he found so little Satisfaction, in the Method that was prescrib'd them for their Study's, that he has wish'd his Father had never sent him to *Oxford,* when he found that what he had learnt there, was of little use to him, to enlighten and enlarge his Mind, and to make him more exact in his Reasonings; he fancied it was because his genius was not suited to those Study's." The scholastic philosophy he found

to be "perplex'd with obscure Terms and stuff'd with useless Questions."[1]

But the Universities in Locke's day were being revitalized by the infiltration of the sciences, and by heated controversy over the political and religious issues of the time. It was Descartes, the most famous philosopher of the new science, "that brought Mr. *Locke* (as he himself told me) to relish the Study of Philosophy. For tho' he did not Assent to the Truth of all his Notions, he found that he wrote with great clearness, which made him think, that it was the fault of the Authors, rather than his own, that he had not understood some other Philosophical Books."[2] Through Descartes Locke acquired a strong interest in the sciences, particularly in their experimental branches; and it was very largely in terms of Descartes' system that Locke subsequently developed his own philosophy.

In line with this interest in the sciences Locke busied himself with chemical experiments, and meteorological observations. He also undertook the study of medicine, though he was interested in it as a science rather than as an art, and did not take a medical degree until 1674. These studies brought him into contact with a number of the most distinguished scientists of the day, notably Boyle and Sydenham. He made meteorological observations included in Boyle's *History of the Air* (1691), a book which he edited after the author's death. In 1668 he was made a fellow of the recently established Royal Society.

It was during his residence at Oxford, also, that Locke's views on politics and religion took shape. On the question of the relations of church to state he was greatly influenced by John Owen, at that time dean of Christ Church and vice-chancellor of the university. Owen, one of the leaders of the Independents, though a strong Puritan, was a champion of religious toleration in an age of warring sects. From him

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[1]Le Clerc's *The Life and Character of Mr. John Locke.* Quoted from the reprint in M. W. Calkins' *Locke's Essay Concerning Human Understanding,* pp. x–xi.

[2]*Ibid.,* p. xii.

Locke absorbed the ideal of toleration and derived the practical plan for realizing it—a broad and comprehensive church. Locke differed from Owen only in believing the Church of England to be a better basis for such an inclusive religious establishment than any non-conformist group. Accordingly, he left the Independents and joined the Church of England.

Locke might well have remained all his life an Oxford don, had it not been for an accidental meeting in 1666 with Lord Ashley, afterwards first Earl of Shaftesbury. The two men contracted an immediate and lasting friendship. Locke became virtually a member of Ashley's household, performing various secretarial and business duties—among them the selection of a suitable wife for his patron's son—and serving as a confidential adviser in political matters. He also held a number of minor governmental posts while Shaftesbury was in office, and participated in drawing up a constitution for the government of Carolina which was never put into effect.

During this residence in London, and probably about the year 1670, there occurred that meeting of "five or six friends" which started Locke on the composition of the *Essay*. The subject under discussion was "the principles of morality and revealed religion." The friends "found themselves quickly at a stand, by the difficulties that rose on every side. After we had awhile puzzled ourselves, without coming any nearer a resolution of those doubts which perplexed us, it came into my thoughts that we took a wrong course; and that before we set ourselves upon inquiries of that nature, it was necessary to examine our own abilities, and see what *objects* our understandings were, or were not, fitted to deal with. This I proposed to the company, who all readily assented; and thereupon it was agreed that this should be our first inquiry. Some hasty and undigested thoughts, on a subject I had never before considered, which I set down against our next meeting, gave the first entrance into this Discourse; which having been thus begun by chance, was continued by intreaty; written by incoherent parcels; and after long intervals of neglect, resumed again, as my humor or occasions permitted; and at

not, fitted to deal with." He realized that unless we "search out the bounds between opinion and knowledge; and examine by what measures, in things whereof we have no certain knowledge, we ought to regulate our assent and moderate our persuasion,"[1] we will dissipate our intellectual energies in futile theorizing and disputation. Greatly impressed with the way in which problems were solved and controversies settled in the new sciences of nature, he hoped by his enquiry both to eliminate the remnants of scholasticism in those subjects and to introduce something of the spirit and method of scientific enquiry into the discussion of ethical, political and religious subjects. His purpose was above all a moral one, to induce men to tolerate diversity of opinion on these controverted topics by persuading them of their ignorance. He was confident that in undertaking to settle useless disputes by demonstrating the limitations of our knowledge, he would also be able to show that our knowledge is sufficient for our state and concerns. In performing this task he considered himself "to be employed as an under-laborer in clearing the ground a little, and removing some of the rubbish that lies in the way of knowledge."[2]

Locke formally defines his object in the *Essay* as an enquiry "into the original, certainty, and extent of *human Knowledge*, together with the grounds and degrees of *belief, opinion*, and *assent*."[3] The first three books are chiefly concerned with the origin of our ideas. Locke starts with the postulate that ideas are the materials of all our knowledge. This term he uses "to stand for whatsoever is the *object* of the understanding when a man thinks," and by it he means "whatever is meant by *phantasm, notion, species,* or *whatever it is which the mind can be employed about in thinking*."[4]

The first question being what is the origin of these ideas, Locke devotes Book I of the *Essay* to refuting the "established

[1] *Essay*, Introduction, § 3.
[2] Epistle to the Reader.
[3] Introduction, § 2.
[4] *Ibid.*, § 8.

opinion amongst some men, that there are in the understanding certain *innate principles;* some primary notions, κοιναὶ ἔννοιαι, characters, as it were stamped upon the mind of man; which the soul receives in its very first being, and brings into the world with it."[1] Locke's argument against these supposed innate ideas depends upon his definition of idea. Since our idea is "whatsoever is the *object* of the understanding when a man thinks," it follows that to *have* an idea is to be aware of it, "*having ideas,* and *perception* being the same thing."[2] In terms of Locke's definition, therefore, 'innate' ideas would have to be the first and clearest ideas of which every human mind is aware. But it is easy for him to show that the sort of ideas which are held to be innate explicitly occur to many human minds but late, if ever: infants, idiots, savages, and, for that matter, a great number of ordinary men have them not.

Locke's moral purpose in writing the *Essay* comes out strongly in his polemic against innate ideas. In attacking them he was "clearing away the rubbish" of the decadent scholasticism which still lingered on in his time, and also attacking the 'enthusiasm' and dogmatism characteristic of contemporary religious controversy. Innate ideas were to him the source of prejudice and bigotry. Their proponents made "this the principle of principles,—*that principles must not be* questioned." Thus they "eased the lazy from the pains of search, and stopped the enquiry of the doubtful."[3]

Locke now, in the remainder of the work, proposes to show "how men, barely by the use of their natural faculties, may attain to all the knowledge they have, without the help of any innate impressions; and may arrive at certainty, without any such original notions or principles."[4] He states his conception of the origin of our knowledge as follows: "Let us then suppose the mind to be, as we say, white paper, void

[1]Bk. I, ch. i, § 1.
[2]Bk. II, ch. i, § 9.
[3]Bk. I, ch. iii, § 25.
[4]Bk. I, ch. i, § 1.

of all characters, without any ideas:—How comes it to be furnished? Whence comes it by that vast store which the busy and boundless fancy of man has painted on it with an almost endless variety? Whence has it all the *materials* of reason and knowledge? To this I answer, in one word, from EXPERIENCE. In that all our knowledge is founded; and from that it ultimately derives itself. Our observation employed either, about external sensible objects, or about the internal operations of our minds perceived and reflected on by ourselves, is that which supplies our understandings with all the *materials* of thinking. These two are the fountains of knowledge, from whence all the ideas we have, or can naturally have, do spring."[1]

In the remainder of Book II he proceeds in great detail to trace out by his "plain, historical method," the way in which our various ideas originate from experience. Locke distinguishes ideas as simple and complex. Simple ideas of sensation are the "several distinct perceptions of things" according to the various ways in which our senses are affected by objects; simple ideas of reflection originate in "the perception of the operations of our own mind within us, as it is employed about the ideas it has got."[2]

Complex ideas are produced by the mind's operating upon the materials of its simple ideas combining, comparing, and distinguishing them. In this way are generated three sorts of complex ideas, of *modes, substances,* and *relations.* The bulk of Book II is taken up with a detailed analysis of certain key ideas such as those of *solidity, space, duration, number, infinity, power, causality,* and *substance.* In each case Locke tries to exhibit the meaning of the idea by disclosing its origins in experience. Locke had at first intended to pass directly from his study of the "original, sorts, and extent of our Ideas" in Book II, to the demonstration of "what use the understanding makes of them, and what Knowledge we have

[1]Bk. II, ch. i, § 2.

[2]Bk. II, ch. i, § 3–4.

by them." But, realizing that there is such a close connection between ideas and words "that it is impossible to speak clearly and distinctly of our knowledge, which all consists in propositions, without considering, first, the nature, use, and signification of Language,"[1] he introduced a third book devoted to that topic.

This book is in the nature of an appendix, as the first was of a preface, to the central argument of Book II. In it Locke develops his theory of abstract ideas and general terms, and introduces the cognate distinction of *real* vs. *nominal* essences: "Words," he says, "become general by being made the signs of general ideas: and ideas become general by separating from them the circumstances of time and place, and any other ideas that may determine them to this or that particular existence. By this way of abstraction they are made capable of representing more individuals than one; each of which, having in it a conformity to that abstract idea, is (as we call it) of that sort."[2] But abstract ideas of substances represent merely the "nominal," not the "real" essence of the objects to which they refer, for the abstract idea that we have merely denotes the *coexistence* of certain qualities, "e.g., the nominal essence of gold is that complex idea the word gold stands for, let it be, for instance, a body yellow, of a certain weight, malleable, fusible, and fixed. But the real essence is the constitution of the insensible parts of that body, on which those qualities and all the other properties of gold depend. How far these two are different, though they are both called essence, is obvious."[3] This distinction between nominal and real essence becomes of crucial importance in the ensuing discussion, in Book IV, of the nature and extent of our knowledge.

Locke is now ready to face his problem: the certainty and extent of human knowledge. By definition the mind is conversant only about its ideas; ideas themselves are not knowledge, but the materials thereof; hence knowledge must con-

[1]Bk. II, ch. xxxiii, § 19.
[2]Bk. III, ch. iii, § 6.
[3]Bk. III, ch. vi, § 2.

sist in the perception of a *relation:* "the perception of the connection and agreement, or disagreement and repugnancy, of any of our ideas."[1] We can perceive such agreement or disagreement: "(1) either by *intuition,* or the immediate comparing of any two ideas; or (2) by *reason,* examining the agreement or disagreement of two ideas by the intervention of some others; or (3) by *sensation,* perceiving the existence of particular things."[2] By *intuition* we may be assured of our own existence and of certain self-evident truths such as the axioms of mathematics; by *reasoning* we can demonstrate the existence of God, the propositions of mathematics, and (so Locke thinks) construct a deductive science of morality; but "of the existence of anything else, we have no other but a sensitive knowledge, which extends not beyond the objects present to our senses."[3] The reason for this sceptical conclusion in respect to our knowledge of natural objects is that we are ignorant of the real essences of bodies. Since we know these bodies only in terms of their *effects* upon our organs of sense (which are our ideas of sensation, or sensible qualities) we cannot have any certain knowledge of their real essences, i.e. "the real constitution of the minute parts on which their qualities depend." Locke has no doubt that if we could know "the figure, size, texture, and motion" of the minute parts of bodies we would be able to deduce their powers of operation upon one another and their effects upon ourselves. "But whilst we are destitute of senses acute enough to discover the minute particles of bodies, and to give us ideas of their mechanical affections, we must be content to be ignorant of their properties and ways of operation; nor can we be assured about them any farther than some few trials we make are able to reach." "And therefore," he concludes, "I am apt to doubt, that how far soever human industry may advance useful and experimental philosophy in

[1]Bk. IV, ch. i, § 2.
[2]Bk. IV, ch. iii, § 2.
[3]Bk. IV, ch. iii, § 21.

physical things, *scientifical* will still be out of our reach; because we want perfect and adequate ideas of those very bodies which are nearest to us, and most under our command."[1]

In respect to matters of fact we must then forsake the quest for certainty. A real and adequate knowledge of those universal and necessary relations, or, as Bacon would have termed them, 'forms,' which (Locke supposes) are the 'laws' of nature, is precluded by the fact that, being ourselves but natural bodies, we can never know what other bodies are beyond what is revealed in our interactions with them. Our 'real' knowledge is therefore "something very short and scanty"; "so in the greatest part of our concernment, [God] has afforded us only the twilight, as I may so say, of *probability,* suitable, I presume, to that state of mediocrity and probationership He has been pleased to place us in here."[2] Thus the *Essay* closes on the same moral note with which it opened.

Locke had made an impressive attempt to formulate a genuinely empirical theory of knowledge, in harmony with the methods and results of the mathematical and experimental sciences. As such it was enormously influential. In part this was due to the fact that he happened to hit upon a temporarily satisfactory reconciliation of traditional conceptions of knowledge with the new methods of science. His was a mediating theory suitable to an age of transition. His influence was also due to the honest and open way in which he revealed to his readers the perplexities and confusions engendered by this attempt at compromise. His critical readers found that he raised more problems than he solved. In consequence, the great empiricists of the eighteenth century, Berkeley, Hume, and Hartley, formulated their own thought very largely in terms of a direct criticism of the *Essay.*

Locke's other philosophical writings were equally successful and influential attempts to deal with vital issues of his time. The *Two Treatises of Government* were written "to

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[1]Bk. IV, ch. iii, § 25-26.

[2]Bk. IV, ch. xiv, § 2.

establish the throne of our great restorer, our present King William; to make good his title in the consent of the people"; and "to justify to the world the people of England, whose love of their just and natural rights, with their resolution to preserve them, saved the nation when it was on the very brink of slavery and ruin."[1] In the first *Treatise* he gave the *coup de grâce* to the theory of divine right as it had been put forward by Sir Robert Filmer in his *Patriarcha* (1680); in the second, he stated his positive theory of government in terms of the regnant conceptions of natural law, natural right, and a social contract. Locke's theory, though constructed in terms of the same fictions, is the antithesis to that of Hobbes, whom, however, he ignores. Locke conceives the state of nature as itself a state of society. In this natural society men are morally bound to live according to the law of nature in mutual peace and coöperation. All men are born free and equal in respect to natural rights. Whatever a man "mixes his labor with" he makes his natural property and has the right to possess for his own use. But the love of power over others, "the first original of most vicious habits," tends constantly to produce insecurity and fear, hence the need of government. Accordingly men "join in society with others who are already united or have a mind to unite, for the mutual preservation of their lives, liberties, and estates."[2] But they do not, as with Hobbes, give up all of their natural rights to a third party, a sovereign. Instead they merely delegate some of their rights to a government, empowered to enforce a known body of law, a constitution. Thus the compact is between the people and the government. The people have the right to resist a tyranny since it has clearly dissolved the compact and is no longer a legitimate government. This presentation of the theory of government by consent remained the political scripture of the Whig Party throughout the eighteenth century, it had great effect upon subsequent politi-

[1] *Works,* V, p. 209.
[2] *Works,* V, p. 412.

cal theorists such as Montesquieu and Rousseau, and it greatly influenced the framers of the American constitution.

It remains briefly to indicate the import of Locke's writings on the subjects of toleration and religion. Locke, in his *Letters* on toleration, argued for a free church in a free state. All religious organizations, he thought, should be voluntary, and to them the government ought to offer protection without favor. Toleration, however, has certain practical limits: he excluded atheists and Catholics, the first on the ground that no opinion destructive of society should be tolerated, and the second because it was a sect which gave its allegiance to a foreign power. In the *Reasonableness of Christianity* Locke attempts to implement his plea for toleration by showing that there exists a set of fundamental propositions on which all Christians, however much they might differ, can agree. He finds only three beliefs to be essential to the Christian faith: in the existence of God, in the Messiahship of Jesus, and in the principles of morality as set forth in the Scriptures. The first and last of these tenets can be demonstrated by reason, as well as from Scripture, and constitute the content of natural religion. By reducing what is required on faith to the one bare essential of a belief in Christ, Locke hoped to provide the foundation for a comprehensive church establishment in which every protestant sect could be included, thus obviating further quarrel and dissent in matters of religion.

When we look at them collectively, it is clear that the whole of Locke's writings were dedicated to the inculcation of toleration in thought and practice: he believed that he had found a method in the natural sciences which, if adequately understood and applied, would curb our inveterate propensity to rash generalization and intransigent belief, a method that would enable us to transform our educational, political and religious institutions without violence and in a way that would intelligently adapt them to the real needs of a society that was in rapid process of transformation. The specific practical issues with which Locke was so deeply concerned belong to the past, but the *Essay* remains as the greatest

attempt in the seventeenth century to work out a pragmatic and naturalistic theory of knowledge, and one of those few books that have exerted a formative and controlling influence on the subsequent development of philosophic thought.

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FRANCIS BACON

The Great Instauration

PROŒMIUM

PREFACE

PLAN OF THE WORK

NOVUM ORGANUM

THE GREAT INSTAURATION

PROŒMIUM

FRANCIS OF VERULAM

REASONED THUS WITH HIMSELF,
AND JUDGED IT TO BE FOR THE INTEREST OF THE PRESENT AND FUTURE GENERATIONS THAT THEY SHOULD BE MADE ACQUAINTED WITH HIS THOUGHTS

BEING convinced that the human intellect makes its own difficulties, not using the true helps which are at man's disposal soberly and judiciously; whence follows manifold ignorance of things, and by reason of that ignorance mischiefs innumerable; he thought all trial should be made, whether that commerce between the mind of man and the nature of things, which is more precious than anything on earth, or at least than anything that is of the earth, might by any means be restored to its perfect and original condition, or if that may not be, yet reduced to a better condition than that in which it now is. Now that the errors which have hitherto prevailed, and which will prevail for ever, should (if the mind be left to go its own way), either by the natural force of the understanding or by help of the aids and instruments of logic, one by one correct themselves, was a thing not to be hoped for: because the primary notions of things which the mind readily and passively imbibes, stores up, and accumulates (and it is from them that all the rest flow) are false, confused, and overhastily abstracted from the facts; nor are the secondary and subsequent notions less arbitrary and inconstant: whence it follows that the entire fabric of human reason which we employ in the inquisition of nature, is badly put together and built up, and

like some magnificent structure without any foundation. For while men are occupied in admiring and applauding the false powers of the mind, they pass by and throw away those true powers, which, if it be supplied with the proper aids and can itself be content to wait upon nature instead of vainly affecting to overrule her, are within its reach. There was but one course left, therefore,—to try the whole thing anew upon a better plan, and to commence a total reconstruction of sciences, arts, and all human knowledge, raised upon the proper foundations. And this, though in the project and undertaking it may seem a thing infinite and beyond the powers of man, yet when it comes to be dealt with it will be found sound and sober, more so than what has been done hitherto. For of this there is some issue; whereas in what is now done in the matter of science there is only a whirling round about, and perpetual agitation, ending where it began. And although he was well aware how solitary an enterprise it is, and how hard a thing to win faith and credit for; nevertheless he was resolved not to abandon either it or himself, nor to be deterred from trying and entering upon that one path which is alone open to the human mind. For better it is to make a beginning of that which may lead to something, than to engage in a perpetual struggle and pursuit in courses which have no exit. And certainly the two ways of contemplation are much like those two ways of action, so much celebrated, in this—that the one, arduous and difficult in the beginning, leads out at last into the open country; while the other, seeming at first sight easy and free from obstruction, leads to pathless and precipitous places.

Moreover, because he knew not how long it might be before these things would occur to anyone else, judging especially from this, that he has found no man hitherto who has applied his mind to the like, he resolved to publish at once so much as he has been able to complete. The cause of which haste was not ambition for himself, but solicitude for the work; that in case of his death there might remain some outline and project of that which he had conceived, and some evidence

likewise of his honest mind and inclination towards the benefit of the human race. Certain it is that all other ambition whatsoever seemed poor in his eyes compared with the work which he had in hand; seeing that the matter at issue is either nothing, or a thing so great that it may well be content with its own merit, without seeking other recompense.

PREFACE

That the state of knowledge is not prosperous nor greatly advancing; and that a way must be opened for the human understanding entirely different from any hitherto known, and other helps provided, in order that the mind may exercise over the nature of things the authority which properly belongs to it.

IT SEEMS to me that men do not rightly understand either their store or their strength, but overrate the one and underrate the other. Hence it follows, that either from an extravagant estimate of the value of the arts which they possess, they seek no further; or else from too mean an estimate of their own powers, they spend their strength in small matters and never put it fairly to the trial in those which go to the main. These are as the pillars of fate set in the path of knowledge; for men have neither desire nor hope to encourage them to penetrate further. And since opinion of store is one of the chief causes of want, and satisfaction with the present induces neglect of provision for the future, it becomes a thing not only useful, but absolutely necessary, that the excess of honor and admiration with which our existing stock of inventions is regarded be in the very entrance and threshold of the work, and that frankly and without circumlocution, stripped off, and men be duly warned not to exaggerate or make too much of them. For let a man look carefully into all that variety of books with which the arts and sciences abound,

he will find everywhere endless repetitions of the same thing, varying in the method of treatment, but not new in substance, insomuch that the whole stock, numerous as it appears at first view, proves on examination to be but scanty. And for its value and utility it must be plainly avowed that that wisdom which we have derived principally from the Greeks is but like the boyhood of knowledge, and has the characteristic property of boys: it can talk, but it cannot generate; for it is fruitful of controversies but barren of works. So that the state of learning as it now is appears to be represented to the life in the old fable of Scylla, who had the head and face of a virgin, but her womb was hung round with barking monsters, from which she could not be delivered. For in like manner the sciences to which we are accustomed have certain general positions which are specious and flattering; but as soon as they come to particulars, which are as the parts of generation, when they should produce fruit and works, then arise contentions and barking disputations, which are the end of the matter and all the issue they can yield. Observe also, that if sciences of this kind had any life in them, that could never have come to pass which has been the case now for many ages—that they stand almost at a stay, without receiving any augmentations worthy of the human race; insomuch that many times not only what was asserted once is asserted still, but what was a question once is a question still, and instead of being resolved by discussion is only fixed and fed; and all the tradition and succession of schools is still a succession of masters and scholars, not of inventors and those who bring to further perfection the things invented. In the mechanical arts we do not find it so: they, on the contrary, as having in them some breath of life, are continually growing and becoming more perfect. As originally invented they are commonly rude, clumsy, and shapeless; afterwards they acquire new powers and more commodious arrangements and constructions; in so far that men shall sooner leave the study and pursuit of them and turn to something else, than they arrive at the ultimate perfection of which they are capable. Philosophy and the intellectual

sciences, on the contrary, stand like statues, worshipped and celebrated, but not moved or advanced. Nay, they sometimes flourish most in the hands of the first author, and afterwards degenerate. For when men have once made over their judgments to others' keeping, and (like those senators whom they called *Pedarii*) have agreed to support some one person's opinion, from that time they make no enlargement of the sciences themselves, but fall to the servile office of embellishing certain individual authors and increasing their retinue. And let it not be said that the sciences have been growing gradually till they have at last reached their full stature, and so (their course being completed) have settled in the works of a few writers; and that there being now no room for the invention of better, all that remains is to embellish and cultivate those things which have been invented already. Would it were so! But the truth is that this appropriating of the sciences has its origin in nothing better than the confidence of a few persons and the sloth and indolence of the rest. For after the sciences had been in several parts perhaps cultivated and handled diligently, there has risen up some man of bold disposition, and famous for methods and short ways which people like, who has in appearance reduced them to an art, while he has in fact only spoiled all that the others had done. And yet this is what posterity like, because it makes the work short and easy, and saves further inquiry, of which they are weary and impatient. And if anyone take this general acquiescence and consent for an argument of weight, as being the judgment of Time, let me tell him that the reasoning on which he relies is most fallacious and weak. For, first, we are far from knowing all that in the matter of sciences and arts has in various ages and places been brought to light and published; much less, all that has been by private persons secretly attempted and stirred; so neither the births nor the miscarriages of Time are entered in our records. Nor, secondly, is the consent itself and the time it has continued a consideration of much worth. For however various are the forms of civil polities, there is but one form of polity in the sciences;

and that always has been and always will be popular. Now the doctrines which find most favor with the populace are those which are either contentious and pugnacious, or specious and empty; such, I say, as either entangle assent or tickle it. And therefore no doubt the greatest wits in each successive age have been forced out of their own course; men of capacity and intellect above the vulgar having been fain, for reputation's sake, to bow to the judgment of the time and the multitude; and thus if any contemplations of a higher order took light anywhere, they were presently blown out by the winds of vulgar opinions. So that Time is like a river, which has brought down to us things light and puffed up, while those which are weighty and solid have sunk. Nay, those very authors who have usurped a kind of dictatorship in the sciences and taken upon them to lay down the law with such confidence, yet when from time to time they come to themselves again, they fall to complaints of the subtlety of nature, the hiding-places of truth, the obscurity of things, the entanglement of causes, the weakness of the human mind; wherein nevertheless they show themselves never the more modest, seeing that they will rather lay the blame upon the common condition of men and nature than upon themselves. And then whatever any art fails to attain, they ever set it down upon the authority of that art itself as impossible of attainment; and how can art be found guilty when it is judge in its own cause? So it is but a device for exempting ignorance from ignominy. Now for those things which are delivered and received, this is their condition: barren of works, full of questions; in point of enlargement slow and languid; carrying a show of perfection in the whole, but in the parts ill filled up; in selection popular, and unsatisfactory even to those who propound them; and therefore fenced round and set forth with sundry artifices. And if there be any who have determined to make trial for themselves, and put their own strength to the work of advancing the boundaries of the sciences, yet have they not ventured to cast themselves completely loose from received opinions or to seek their knowl-

edge at the fountain; but they think they have done some great thing if they do but add and introduce into the existing sum of science something of their own; prudently considering with themselves that by making the addition they can assert their liberty, while they retain the credit of modesty by assenting to the rest. But these mediocrities and middle ways so much praised, in deferring to opinions and customs, turn to the great detriment of the sciences. For it is hardly possible at once to admire an author and to go beyond him; knowledge being as water, which will not rise above the level from which it fell. Men of this kind, therefore, amend some things, but advance little; and improve the condition of knowledge, but do not extend its range. Some, indeed, there have been who have gone more boldly to work, and taking it all for an open matter and giving their genius full play, have made a passage for themselves and their own opinions by pulling down and demolishing former ones; and yet all their stir has but little advanced the matter; since their aim has been not to extend philosophy and the arts in substance and value, but only to change doctrines and transfer the kingdom of opinions to themselves; whereby little has indeed been gained, for though the error be the opposite of the other, the causes of erring are the same in both. And if there have been any who, not binding themselves either to other men's opinions or to their own, but loving liberty, have desired to engage others along with themselves in search, these, though honest in intention, have been weak in endeavor. For they have been content to follow probable reasons, and are carried round in a whirl of arguments, and in the promiscuous liberty of search have relaxed the severity of inquiry. There is none who has dwelt upon experience and the facts of nature as long as is necessary. Some there are indeed who have committed themselves to the waves of experience, and almost turned mechanics; yet these again have in their very experiments pursued a kind of wandering inquiry, without any regular system of operations. And besides they have mostly proposed to themselves certain petty tasks, taking it for a

great matter to work out some single discovery;—a course of proceeding at once poor in aim and unskillful in design. For no man can rightly and successfully investigate the nature of anything in the thing itself; let him vary his experiments as laboriously as he will, he never comes to a resting-place, but still finds something to seek beyond. And there is another thing to be remembered: namely, that all industry in experimenting has begun with proposing to itself certain definite works to be accomplished, and has pursued them with premature and unseasonable eagerness; it has sought, I say, experiments of Fruit, not experiments of Light; not imitating the divine procedure, which in its first day's work created light only and assigned to it one entire day; on which day it produced no material work, but proceeded to that on the days following. As for those who have given the first place to Logic, supposing that the surest helps to the sciences were to be found in that, they have indeed most truly and excellently perceived that the human intellect left to its own course is not to be trusted; but then the remedy is altogether too weak for the disease, nor is it without evil in itself. For the Logic which is received, though it be very properly applied to civil business and to those arts which rest in discourse and opinion, is not nearly subtle enough to deal with nature; and in offering at what it cannot master, has done more to establish and perpetuate error than to open the way to truth.

Upon the whole therefore, it seems that men have not been happy hitherto either in the trust which they have placed in others or in their own industry with regard to the sciences; especially as neither the demonstrations nor the experiments as yet known are much to be relied upon. But the universe to the eye of the human understanding is framed like a labyrinth; presenting as it does on every side so many ambiguities of way, such deceitful resemblances of objects and signs, natures so irregular in their lines, and so knotted and entangled. And then the way is still to be made by the uncertain light of the sense, sometimes shining out, sometimes clouded over, through the woods of experience and particulars: while

those who offer themselves for guides are (as was said) themselves also puzzled, and increase the number of errors and wanderers. In circumstances so difficult, neither the natural force of man's judgment nor even any accidental felicity offers any chance of success. No excellence of wit, no repetition of chance experiments, can overcome such difficulties as these. Our steps must be guided by a clue, and the whole way from the very first perception of the senses must be laid out upon a sure plan. Not that I would be understood to mean that nothing whatever has been done in so many ages by so great labors. We have no reason to be ashamed of the discoveries which have been made, and no doubt the ancients proved themselves in everything that turns on wit and abstract meditation, wonderful men. But as in former ages when men sailed only by observation of the stars, they could indeed coast along the shores of the old continent or cross a few small and mediterranean seas; but before the ocean could be traversed and the new world discovered, the use of the mariner's needle, as a more faithful and certain guide, had to be found out: in like manner the discoveries which have been hitherto made in the arts and sciences are such as might be made by practice, meditation, observation, argumentation—for they lay near to the senses, and immediately beneath common notions; but before we can reach the remoter and more hidden parts of nature, it is necessary that a more perfect use and application of the human mind and intellect be introduced.

For my own part at least, in obedience to the everlasting love of truth, I have committed myself to the uncertainties and difficulties and solitudes of the ways, and relying on the divine assistance have upheld my mind both against the shocks and embattled ranks of opinion, and against my own private and inward hesitations and scruples, and against the fogs and clouds of nature, and the phantoms flitting about on every side; in the hope of providing at last for the present and future generations guidance more faithful and secure. Wherein if I have made any progress, the way has been opened to me by no other means than the true and legitimate humiliation of

the human spirit. For all those who before me have applied themselves to the invention of arts have but cast a glance or two upon facts and examples and experience, and straightway proceeded, as if invention were nothing more than an exercise of thought, to invoke their own spirits to give them oracles. I, on the contrary, dwelling purely and constantly among the facts of nature, withdraw my intellect from them no further than may suffice to let the images and rays of natural objects meet in a point, as they do in the sense of vision; whence it follows that the strength and excellency of the wit has but little to do in the matter. And the same humility which I use in inventing I employ likewise in teaching. For I do not endeavor either by triumphs of confutation, or pleadings of antiquity, or assumption of authority, or even by the veil of obscurity, to invest these inventions of mine with any majesty; which might easily be done by one who sought to give luster to his own name rather than light to other men's minds. I have not sought (I say) nor do I seek either to force or ensnare men's judgments; but I lead them to things themselves and the concordance of things, that they may see for themselves what they have, what they can dispute, what they can add and contribute to the common stock. And for myself, if in anything I have been either too credulous or too little awake and attentive, or if I have fallen off by the way and left the inquiry incomplete, nevertheless I so present these things naked and open, that my errors can be marked and set aside before the mass of knowledge be further infected by them; and it will be easy also for others to continue and carry on my labors. And by these means I suppose that I have established for ever a true and lawful marriage between the empirical and the rational faculty, the unkind and ill-starred divorce and separation of which has thrown into confusion all the affairs of the human family.

Wherefore, seeing that these things do not depend upon myself, at the outset of the work I most humbly and fervently pray to God the Father, God the Son, and God the Holy Ghost, that remembering the sorrows of mankind and the pil-

grimage of this our life wherein we wear out days few and evil, They will vouchsafe through my hands to endow the human family with new mercies. This likewise I humbly pray, that things human may not interfere with things divine, and that from the opening of the ways of sense and the increase of natural light there may arise in our minds no incredulity or darkness with regard to the divine mysteries; but rather that the understanding being thereby purified and purged of fancies and vanity, and yet not the less subject and entirely submissive to the divine oracles, may give to faith that which is faith's. Lastly, that knowledge being now discharged of that venom which the serpent infused into it, and which makes the mind of man to swell, we may not be wise above measure and sobriety, but cultivate truth in charity.

And now having said my prayers, I turn to men; to whom I have certain salutary admonitions to offer and certain fair requests to make. My first admonition (which was also my prayer) is that men confine the sense within the limits of duty in respect of things divine: for the sense is like the sun, which reveals the face of earth, but seals and shuts up the face of heaven. My next, that in flying from this evil they fall not into the opposite error, which they will surely do if they think that the inquisition of nature is in any part interdicted or forbidden. For it was not that pure and uncorrupted natural knowledge whereby Adam gave names to the creatures according to their propriety, which gave occasion to the fall. It was the ambitious and proud desire of moral knowledge to judge of good and evil, to the end that man may revolt from God and give laws to himself, which was the form and manner of the temptation. Whereas of the sciences which regard nature, the divine philosopher declares that "it is the glory of God to conceal a thing, but it is the glory of the King to find a thing out." Even as though the divine nature took pleasure in the innocent and kindly sport of children playing a hide and seek, and vouchsafed of his kindness and goodness to admit the human spirit for his playfellow at that game. Lastly, I would address one general admonition to all: that

they consider what are the true ends of knowledge, and that they seek it not either for pleasure of the mind, or for contention, or for superiority to others, or for profit, or fame, or power, or any of these inferior things; but for the benefit and use of life; and that they perfect and govern it in charity. For it was from lust of power that the angels fell, from lust of knowledge that man fell; but of charity there can be no excess, neither did angel or man ever come in danger by it.

The requests I have to make are these. Of myself I say nothing; but in behalf of the business which is in hand I entreat men to believe that it is not an opinion to be held, but a work to be done; and to be well assured that I am laboring to lay the foundation, not of any sect or doctrine, but of human utility and power. Next, I ask them to deal fairly by their own interests, and laying aside all emulations and prejudices in favor of this or that opinion, to join in consultation for the common good; and being now freed and guarded by the securities and helps which I offer from the errors and impediments of the way, to come forward themselves and take part in that which remains to be done. Moreover, to be of good hope, nor to imagine that this *Instauration* of mine is a thing infinite and beyond the power of man, when it is in fact the true end and termination of infinite error; and seeing also that it is by no means forgetful of the conditions of mortality and humanity, (for it does not suppose that the work can be altogether completed within one generation, but provides for its being taken up by another); and finally that it seeks for the sciences not arrogantly in the little cells of human wit, but with reverence in the greater world. But it is the empty things that are vast: things solid are most contracted and lie in little room. And now I have only one favor more to ask (else injustice to me may perhaps imperil the business itself) —that men will consider well how far, upon that which I must needs assert (if I am to be consistent with myself), they are entitled to judge and decide upon these doctrines of mine; inasmuch as all that premature human reasoning which anticipates inquiry, and is abstracted from the facts rashly and

sooner than is fit, is by me rejected (so far as the inquisition of nature is concerned) as a thing uncertain, confused, and ill built up; and I cannot be fairly asked to abide by the decision of a tribunal which is itself on its trial.

THE PLAN OF THE WORK

The work is in six Parts:—

I. *The Divisions of the Sciences.*
II. *The New Organon; or, Directions concerning the Interpretation of Nature.*
III. *The Phenomena of the Universe; or, a Natural and Experimental History for the Foundation of Philosophy.*
IV. *The Ladder of the Intellect.*
V. *The Forerunners; or, Anticipations of the New Philosophy.*
VI. *The New Philosophy; or, Active Science.*

The Arguments of the Several Parts

IT BEING part of my design to set everything forth, as far as may be, plainly and perspicuously (for nakedness of the mind is still, as nakedness of the body once was, the companion of innocence and simplicity), let me first explain the order and plan of the work. I distribute it into six parts.

The first part exhibits a summary or general description of the knowledge which the human race at present possesses. For I thought it good to make some pause upon that which is received; that thereby the old may be more easily made perfect and the new more easily approached. And I hold the improvement of that which we have to be as much an object as the acquisition of more. Besides which it will make me the better listened to; for "He that is ignorant (says the proverb) receives not the words of knowledge, unless thou first tell him that which is in his own heart." We will therefore make a coasting voyage along the shores of the arts and

sciences received; not without importing into them some useful things by the way.

In laying out the divisions of the sciences, however, I take into account not only things already invented and known, but likewise things omitted which ought to be there. For there are found in the intellectual, as in the terrestrial globe, waste regions as well as cultivated ones. It is no wonder, therefore, if I am sometimes obliged to depart from the ordinary divisions. For in adding to the total you necessarily alter the parts and sections; and the received divisions of the sciences are fitted only to the received sum of them as it stands now.

With regard to those things which I shall mark as omitted, I intend not merely to set down a simple title or a concise argument of that which is wanted. For as often as I have occasion to report anything as deficient, the nature of which is at all obscure, so that men may not perhaps easily understand what I mean or what the work is which I have in my head; I shall always (provided it be a matter of any worth) take care to subjoin either directions for the execution of such work, or else a portion of the work itself executed by myself as a sample of the whole: thus giving assistance in every case either by work or by counsel. For if it were for the sake of my own reputation only and other men's interests were not concerned in it, I would not have any man think that in such cases merely some light and vague notion has crossed my mind, and that the things which I desire and offer at are no better than wishes; when they are in fact things which men may certainly command if they will, and of which I have formed in my own mind a clear and detailed conception. For I do not propose merely to survey these regions in my mind, like an augur taking auspices, but to enter them like a general who means to take possession.—So much for the first part of the work.

Having thus coasted past the ancient arts, the next point is to equip the intellect for passing beyond. To the second part therefore belongs the doctrine concerning the better and more

perfect use of human reason in the inquisition of things, and the true helps of the understanding; that thereby (as far as the condition of mortality and humanity allows) the intellect may be raised and exalted, and made capable of overcoming the difficulties and obscurities of nature. The art which I introduce with this view (which I call Interpretation of Nature) is a kind of logic; though the difference between it and the ordinary logic is great, indeed immense. For the ordinary logic professes to contrive and prepare helps and guards for the understanding, as mine does; and in this one point they agree. But mine differs from it in three points especially: viz. in the end aimed at, in the order of demonstration, and in the starting point of the inquiry.

For the end which this science of mine proposes is the invention not of arguments but of arts; not of things in accordance with principles, but of principles themselves; not of probable reasons, but of designations and directions for works. And as the intention is different, so accordingly is the effect: the effect of the one being to overcome an opponent in argument, of the other to command nature in action.

In accordance with this end is also the nature and order of the demonstrations. For in the ordinary logic almost all the work is spent about the syllogism. Of induction the logicians seem hardly to have taken any serious thought, but they pass it by with a slight notice, and hasten on to the formulæ of disputation. I on the contrary, reject demonstration by syllogism, as acting too confusedly, and letting nature slip out of its hands. For although no one can doubt that things which agree in a middle term agree with one another (which is a proposition of mathematical certainty), yet it leaves an opening for deception; which is this. The syllogism consists of propositions; propositions of words; and words are the tokens and signs of notions. Now if the very notions of the mind (which are as the soul of words and the basis of the whole structure) be improperly and over-hastily abstracted from facts, vague, not sufficiently definite, faulty in short in many ways, the whole edifice tumbles. I therefore reject the syllo-

gism; and that not only as regards principles (for to principles the logicians themselves do not apply it) but also as regards middle propositions; which, though obtainable no doubt by the syllogism, are, when so obtained, barren of works, remote from practice, and altogether unavailable for the active department of the sciences. Although therefore I leave to the syllogism and these famous and boasted modes of demonstration their jurisdiction over popular arts and such as are matter of opinion (in which department I leave all as it is), yet in dealing with the nature of things I use induction throughout, and that in the minor propositions as well as the major. For I consider induction to be that form of demonstration which upholds the sense, and closes with nature, and comes to the very brink of operation, if it does not actually deal with it.

Hence it follows that the order of demonstration is likewise inverted. For hitherto the proceeding has been to fly at once from the sense and particulars, up to the most general propositions, as certain fixed poles for the argument to turn upon, and from these to derive the rest by middle terms: a short way, no doubt, but precipitate; and one which will never lead to nature, though it offers an easy and ready way to disputation. Now my plan is to proceed regularly and gradually from one axiom to another, so that the most general are not reached till the last; but then when you do come to them you find them to be not empty notions, but well defined, and such as nature would really recognize as her first principles, and such as lie at the heart and marrow of things.

But the greatest change I introduce is in the form itself of induction and the judgment made thereby. For the induction of which the logicians speak, which proceeds by simple enumeration, is a puerile thing; concludes at hazard; is always liable to be upset by contradictory instance; takes into account only what is known and ordinary; and leads to no result.

Now what the sciences stand in need of is a form of induction which shall analyze experience and take it to pieces, and by a due process of exclusion and rejection lead to an inevitable conclusion. And if that ordinary mode of judgment

practised by the logicians was so laborious, and found exercise for such great wits, how much more labor must we be prepared to bestow upon this other, which is extracted not merely out of the depths of the mind, but out of the very bowels of nature.

Nor is this all. For I also sink the foundations of the sciences deeper and firmer; and I begin the inquiry nearer the source than men have done heretofore; submitting to examination those things which the common logic takes on trust. For first, the logicians borrow the principles of each science from the science itself; secondly, they hold in reverence the first notions of the mind; and lastly, they receive as conclusive the immediate informations of the sense, when well disposed. Now upon the first point, I hold that true logic ought to enter the several provinces of science armed with a higher authority than belongs to the principles of those sciences themselves, and ought to call those putative principles to account until they are fully established. Then with regard to the first notions of the intellect: there is not one of the impressions taken by the intellect when left to go its own way, but I hold it for suspected, and no way established, until it has submitted to a new trial and a fresh judgment has been thereupon pronounced. And lastly, the information of the sense itself I sift and examine in many ways. For certain it is that the senses deceive; but then at the same time they supply the means of discovering their own errors; only the errors are here, the means of discovery are to seek.

The sense fails in two ways. Sometimes it gives no information, sometimes it gives false information. For first, there are very many things which escape the sense, even when best disposed and no way obstructed; by reason either of the subtlety of the whole body, or the minuteness of the parts, or distance of place, or slowness or else swiftness of motion, or familiarity of the object, or other causes. And again when the sense does apprehend a thing its apprehension is not much to be relied upon. For the testimony and information of the sense has reference always to man, not to the universe;

and it is a great error to assert that the sense is the measure of things.

To meet these difficulties, I have sought on all sides diligently and faithfully to provide helps for the sense—substitutes to supply its failures, rectifications to correct its errors; and this I endeavor to accomplish not so much by instruments as by experiments. For the subtlety of experiments is far greater than that of the sense itself, even when assisted by exquisite instruments; such experiments, I mean, as are skillfully and artificially devised for the express purpose of determining the point in question. To the immediate and proper perception of the sense therefore I do not give much weight; but I contrive that the office of the sense shall be only to judge of the experiment, and that the experiment itself shall judge of the thing. And thus I conceive that I perform the office of a true priest of the sense (from which all knowledge in nature must be sought, unless men mean to go mad) and a not unskillful interpreter of its oracles; and that while others only profess to uphold and cultivate the sense, I do so in fact. Such then are the provisions I make for finding the genuine light of nature and kindling and bringing it to bear. And they would be sufficient of themselves, if the human intellect were even, and like a fair sheet of paper with no writing on it. But since the minds of men are strangely possessed and beset, so that there is no true and even surface left to reflect the genuine rays of things, it is necessary to seek a remedy for this also.

Now the idols, or phantoms, by which the mind is occupied are either adventitious or innate. The adventitious come into the mind from without; namely, either from the doctrines and sects of philosophers, or from perverse rules of demonstration. But the innate are inherent in the very nature of the intellect, which is far more prone to error than the sense is. For let men please themselves as they will in admiring and almost adoring the human mind, this is certain: that as an uneven mirror distorts the rays of objects according to its own figure and section, so the mind, when it receives impressions

of objects through the sense, cannot be trusted to report them truly, but in forming its notions mixes up its own nature with the nature of things.

And as the first two kinds of idols are hard to eradicate, so idols of this last kind cannot be eradicated at all. All that can be done is to point them out, so that this insidious action of the mind may be marked and reproved (else as fast as old errors are destroyed new ones will spring up out of the ill complexion of the mind itself, and so we shall have but a change of errors, and not a clearance); and to lay it down once for all as a fixed and established maxim, that the intellect is not qualified to judge except by means of induction, and induction in its legitimate form. This doctrine then of the expurgation of the intellect to qualify it for dealing with truth, is comprised in three refutations: the refutation of the Philosophies, the refutation of the Demonstrations, and the refutation of the Natural Human Reason. The explanation of which things, and of the true relation between the nature of things and the nature of the mind, is as the strewing and decoration of the bridal chamber of the Mind and the Universe, the Divine Goodness assisting; out of which marriage let us hope (and be this the prayer of the bridal song) there may spring helps to man, and a line and race of inventions that may in some degree subdue and overcome the necessities and miseries of humanity. This is the second part of the work.

But I design not only to indicate and mark out the ways, but also to enter them. And therefore the third part of the work embraces the Phenomena of the Universe; that is to say, experience of every kind, and such a natural history as may serve for a foundation to build philosophy upon. For a good method of demonstration or form of interpreting nature may keep the mind from going astray or stumbling, but it is not any excellence of method that can supply it with the material of knowledge. Those however who aspire not to guess and divine, but to discover and know; who propose not to

devise mimic and fabulus worlds of their own, but to examine and dissect the nature of this very world itself; must go to facts themselves for everything. Nor can the place of this labor and search and worldwide perambulation be supplied by any genius or meditation or argumentation; no, not if all men's wits could meet in one. This therefore we must have, or the business must be for ever abandoned. But up to this day such has been the condition of men in this matter, that it is no wonder if nature will not give herself into their hands.

For first, the information of the sense itself, sometimes failing, sometimes false; observation, careless, irregular, and led by chance; tradition, vain and fed on rumor; practice, slavishly bent upon its work; experiment, blind, stupid, vague, and prematurely broken off; lastly, natural history trivial and poor —all these have contributed to supply the understanding with very bad materials for philosophy and the sciences.

Then an attempt is made to mend the matter by a preposterous subtlety and winnowing of argument. But this comes too late, the case being already past remedy; and is far from setting the business right or sifting away the errors. The only hope therefore of any greater increase or progress lies in a reconstruction of the sciences.

Of this reconstruction the foundation must be laid in natural history, and that of a new kind and gathered on a new principle. For it is in vain that you polish the mirror if there are no images to be reflected; and it is as necessary that the intellect should be supplied with fit matter to work upon, as with safeguards to guide its working. But my history differs from that in use (as my logic does) in many things,—in end and office, in mass and composition, in subtlety, in selection also and setting forth, with a view to the operations which are to follow.

For first, the object of the natural history which I propose is not so much to delight with variety of matter, or to help with present use of experiments, as to give light to the discovery of causes and supply a suckling philosophy with its first food. For though it be true that I am principally in

pursuit of works and the active department of the sciences, yet I wait for harvest-time, and do not attempt to mow the moss or to reap the green corn. For I well know that axioms once rightly discovered will carry whole troops of works along with them; and produce them, not here and there one, but in clusters. And that unseasonable and puerile hurry to snatch by way of earnest at the first works which come within reach, I utterly condemn and reject, as an Atalanta's apple that hinders the race. Such then is the office of this natural history of mine.

Next, with regard to the mass and composition of it: I mean it to be a history not only of nature free and at large (when she is left to her own course and does her work her own way),—such as that of the heavenly bodies, meteors, earth and sea, minerals, plants, animals,—but much more of nature under constraint and vexed; that is to say, when by art and the hand of man she is forced out of her natural state, and squeezed and molded. Therefore I set down at length all experiments of the mechanical arts, of the operative part of the liberal arts, of the many crafts which have not yet grown into arts properly so called, so far as I have been able to examine them and as they conduce to the end in view. Nay (to say the plain truth) I do in fact (low and vulgar as men may think it) count more upon this part both for helps and safeguards than upon the other; seeing that the nature of things betrays itself more readily under the vexations of art than in its natural freedom.

Nor do I confine the history to Bodies; but I have thought it my duty besides to make a separate history of such Virtues as may be considered cardinal in nature. I mean those original passions or desires of matter which constitute the primary elements of nature; such as dense and rare, hot and cold, solid and fluid, heavy and light, and several others.

Then again, to speak of subtlety: I seek out and get together a kind of experiment much subtler and simpler than those which occur accidently. For I drag into light many things which no one who was not proceeding by a regular

and certain way to the discovery of causes would have thought of inquiring after; being indeed in themselves of no great use: which shows that they were not sought for on their own account; but having just the same relation to things and works which the letters of the alphabet have to speech and words—which, though in themselves useless, are the elements of which all discourse is made up.

Further, in the selection of the relation and experiments I conceive I have been a more cautious purveyor than those who have hitherto dealt with natural history. For I admit nothing but on the faith of eyes, or at least of careful and severe examination; so that nothing is exaggerated for wonder's sake, but what I state is sound and without mixture of fables or vanity. All received or current falsehoods also (which by strange negligence have been allowed for many ages to prevail and become established) I proscribe and brand by name; that the sciences may be no more troubled with them. For it has been well observed that the fables and superstitions and follies which nurses instill into children do serious injury to their minds; and the same consideration makes me anxious, having the management of the childhood as it were of philosophy in its course of natural history, not to let it accustom itself in the beginning to any vanity. Moreover, whenever I come to a new experiment of any subtlety (though it be in my own opinion certain and approved), I nevertheless subjoin a clear account of the manner in which I made it; that men knowing exactly how each point was made out, may see whether there be any error connected with it, and may arouse themselves to devise proofs more trustworthy and exquisite, if such can be found; and finally, I interpose everywhere admonitions and scruples and cautions, with a religious care to eject, repress, and as it were exorcise every kind of phantasm.

Lastly, knowing how much the sight of man's mind is distracted by experience and history, and how hard it is at the first (especially for minds either tender or preoccupied) to become familiar with nature, I not unfrequently subjoin ob-

servations of my own, being as the first offers, inclinations, and as it were glances of history towards philosophy; both by way of an assurance to men that they will not be kept for ever tossing on the waves of experience, and also that when the time comes for the intellect to begin its work, it may find everything the more ready. By such a natural history then as I have described, I conceive that a safe and convenient approach may be made to nature, and matter supplied of good quality and well prepared for the understanding to work upon.

And now that we have surrounded the intellect with faithful helps and guards, and got together with most careful selection a regular army of divine works, it may seem that we have no more to do but to proceed to philosophy itself. And yet in a matter so difficult and doubtful there are still some things which it seems necessary to premise, partly for convenience of explanation, partly for present use.

Of these the first is to set forth examples of inquiry and invention according to my method, exhibited by anticipation in some particular subjects; choosing such subjects as are at once the most noble in themselves among those under inquiry, and most different one from another; that there may be an example in every kind. I do not speak of those examples which are joined to the several precepts and rules by way of illustration (for of these I have given plenty in the second part of the work); but I mean actual types and models, by which the entire process of the mind and the whole fabric and order of invention from the beginning to the end, in certain subjects, and those various and remarkable, should be set as it were before the eyes. For I remember that in the mathematics, it is easy to follow the demonstration when you have a machine beside you, whereas without that help all appears involved and more subtle than it really is. To examples of this kind,—being in fact nothing more than an application of the second part in detail and at large,—the fourth part of the work is devoted.

The fifth part is for temporary use only, pending the completion of the rest; like interest payable from time to time until the principal be forthcoming. For I do not make so blindly for the end of my journey, as to neglect anything useful that may turn up by the way. And therefore I include in this fifth part such things as I have myself discovered, proved, or added,—not however according to the true rules and methods of interpretation, but by the ordinary use of the understanding in inquiring and discovering. For besides that I hope my speculations may in virtue of my continual conversancy with nature have a value beyond the pretensions of my wit; they will serve in the meantime for wayside inns, in which the mind may rest and refresh itself on its journey to more certain conclusions. Nevertheless I wish it to be understood in the meantime that they are conclusions by which (as not being discovered and proved by the true form of interpretation) I do not at all mean to bind myself. Nor need any one be alarmed at such suspension of judgment, in one who maintains not simply that nothing can be known, but only that nothing can be known except in a certain course and way; and yet establishes provisionally certain degrees of assurance, for use and relief until the mind shall arrive at a knowledge of causes in which it can rest. For even those schools of philosophy which held the absolute impossibility of knowing anything, were not inferior to those which took upon them to pronounce. But then they did not provide helps for the sense and understanding, as I have done, but simply took away all their authority: which is quite a different thing—almost the reverse.

The sixth part of my work (to which the rest is subservient and ministrant) discloses and sets forth that philosophy which by the legitimate, chaste, and severe course of inquiry which I have explained and provided is at length developed and established. The completion however of this last part is a thing both above my strength and beyond my hopes. I have made a beginning of the work—a beginning, as I hope, not unimpor-

tant:—the fortune of the human race will give the issue;—such an issue, it may be, as in the present condition of things and men's minds cannot easily be conceived or imagined. For the matter in hand is no mere felicity of speculation, but the real business and fortunes of the human race, and all power of operation. For man is but the servant and interpreter of nature: what he does and what he knows is only what he has observed of nature's order in fact or in thought; beyond this he knows nothing and can do nothing. For the chain of causes cannot by any force be loosed or broken, nor can nature be commanded except by being obeyed. And so those twin objects, *human knowledge* and *human power,* do really meet in one; and it is from ignorance of causes that operation fails.

And all depends on keeping the eye steadily fixed upon the facts of nature and so receiving their images simply as they are. For God forbid that we should give out a dream of our own imagination for a pattern of the world; rather may He graciously grant to us to write an apocalypse or true vision of the footsteps of the Creator imprinted on his creatures.

Therefore do Thou, O Father, who gavest the visible light as the first fruits of creation, and didst breathe into the face of man the intellectual light as the crown and consummation thereof, guard and protect this work, which coming from Thy goodness returneth to Thy glory. Thou when Thou turnedst to look upon the works which Thy hands had made, sawest that all was very good, and didst rest from Thy labors. But man, when he turned to look upon the work which his hands had made, saw that all was vanity and vexation of spirit, and could find no rest therein. Wherefore if we labor in Thy works with the sweat of our brows, Thou wilt make us partakers of Thy vision and Thy sabbath. Humbly we pray that this mind may be steadfast in us, and that through these our hands, and the hands of others to whom Thou shalt give the same spirit, Thou wilt vouchsafe to endow the human family with new mercies.

THE SECOND PART OF THE WORK,

WHICH IS CALLED

THE NEW ORGANON;

OR,

TRUE DIRECTIONS

CONCERNING

THE INTERPRETATION OF NATURE

PREFACE

THOSE who have taken upon them to lay down the law of nature as a thing already searched out and understood, whether they have spoken in simple assurance or professional affectation, have therein done philosophy and the sciences great injury. For as they have been successful in inducing belief, so they have been effective in quenching and stopping inquiry; and have done more harm by spoiling and putting an end to other men's efforts than good by their own. Those on the other hand who have taken a contrary course, and asserted that absolutely nothing can be known—whether it were from hatred of the ancient sophists, or from uncertainty and fluctuation of mind, or even from a kind of fulness of learning, that they fell upon this opinion,—have certainly advanced reasons for it that are not to be despised; but yet they have neither started from true principles nor rested in the just conclusion, zeal and affectation having carried them much too far. The more ancient of the Greeks (whose writings are lost) took up with better judgment a position between these two extremes, —between the presumption of pronouncing on everything, and the despair of comprehending anything; and though frequently and bitterly complaining of the difficulty of inquiry and the obscurity of things, and like impatient horses champing the bit, they did not the less follow up their object and engage with Nature; thinking (it seems) that this very question—viz.,

whether or no anything can be known—was to be settled not by arguing, but by trying. And yet they too, trusting entirely to the force of their understanding, applied no rule, but made everything turn upon hard thinking and perpetual working and exercise of the mind.

Now my method, though hard to practise, is easy to explain; and it is this. I propose to establish progressive stages of certainty. The evidence of the sense, helped and guarded by a certain process of correction, I retain. But the mental operation which follows the act of sense I for the most part reject; and instead of it, I open and lay out a new and certain path for the mind to proceed in, starting directly from the simple sensuous perception. The necessity of this was felt no doubt by those who attributed so much importance to Logic; showing thereby that they were in search of helps for the understanding, and had no confidence in the native and spontaneous process of the mind. But this remedy comes too late to do any good, when the mind is already, through the daily intercourse and conversation of life, occupied with unsound doctrines and beset on all sides by vain imaginations. And therefore that art of Logic, coming (as I said) too late to the rescue, and no way able to set matters right again, has had the effect of fixing errors rather than disclosing truth. There remains but one course for the recovery of a sound and healthy condition,—namely, that the entire work of the understanding be commenced afresh, and the mind itself be from the very outset not left to take its own course, but guided at every step; and the business be done as if by machinery. Certainly if in things mechanical men had set to work with their naked hands, without help or force of instruments, just as in things intellectual they have set to work with little else than the naked forces of the understanding, very small would the matters have been which, even with their best efforts applied in conjunction, they could have attempted or accomplished. Now (to pause awhile upon this example and look in it as in a glass) let us suppose that some vast obelisk were (for the decoration of a triumph or some such magnificence)

to be removed from its place, and that men should set to work upon it with their naked hands; would not any sober spectator think them mad? And if they should then send for more people, thinking that in that way they might manage it, would he not think them all the madder? And if they then proceeded to make a selection, putting away the weaker hands, and using only the strong and vigorous, would he not think them madder than ever? And if lastly, not content with this, they resolved to call in aid the art of athletics, and required all their men to come with hands, arms, and sinews well anointed and medicated according to the rules of art, would he not cry out that they were only taking pains to show a kind of method and discretion in their madness? Yet just so it is that men proceed in matters intellectual,—with just the same kind of mad effort and useless combination of forces,—when they hope great things either from the number and coöperation or from the excellency and acuteness of individual wits; yea, and when they endeavor by Logic (which may be considered as a kind of athletic art) to strengthen the sinews of the understanding: and yet with all this study and endeavor it is apparent to any true judgment that they are but applying the naked intellect all the time; whereas in every great work to be done by the hand of man it is manifestly impossible, without instruments and machinery, either for the strength of each to be exerted or the strength of all to be united.

Upon these premises two things occur to me of which, that they may not be overlooked, I would have men reminded. First it falls out fortunately as I think for the allaying of contradictions and heart-burnings, that the honor and reverence due to the ancients remains untouched and undiminished; while I may carry out my designs and at the same time reap the fruit of my modesty. For if I should profess that I, going the same road as the ancients, have something better to produce, there must needs have been some comparison or rivalry between us (not to be avoided by any art of words) in respect of excellency or ability of wit; and though in this there would be nothing unlawful or new, (for if there be anything

misapprehended by them, or falsely laid down, why may not I, using a liberty common to all, take exception to it?) yet the contest, however just and allowable, would have been an unequal one perhaps, in respect of the measure of my own powers. As it is, however,—my object being to open a new way for the understanding, a way by them untried and unknown,—the case is altered; party zeal and emulation are at an end; and I appear merely as a guide to point out the road; an office of small authority, and depending more upon a kind of luck than upon any ability or excellency. And thus much relates to the persons only. The other point of which I would have men reminded relates to the matter itself.

Be it remembered then that I am far from wishing to interfere with the philosophy which now flourishes, or with any other philosophy more correct and complete than this which has been or may hereafter be propounded. For I do not object to the use of this received philosophy, or others like it, for supplying matter for disputations or ornaments for discourse, —for the professor's lecture and for the business of life. Nay more, I declare openly that for these uses the philosophy which I bring forward will not be much available. It does not lie in the way. It cannot be caught up in passage. It does not flatter the understanding by conformity with preconceived notions. Nor will it come down to the apprehension of the vulgar except by its utility and effects.

Let there be therefore (and may it be for the benefit of both) two streams and two dispensations of knowledge; and in like manner two tribes or kindreds of students in philosophy —tribes not hostile or alien to each other, but bound together by mutual services;—let there in short be one method for the cultivation, another for the invention, of knowledge.

And for those who prefer the former, either from hurry or from considerations of business or for want of mental power to take in and embrace the other (which must needs be most men's case), I wish that they may succeed to their desire in what they are about, and obtain what they are pursuing. But if any man there be who, not content to rest in and use the

knowledge which has already been discovered, aspires to penetrate further; to overcome, not an adversary in argument, but nature in action; to seek, not pretty and probable conjectures, but certain and demonstrable knowledge;—I invite all such to join themselves, as true sons of knowledge, with me, that passing by the outer courts of nature, which numbers have trodden, we may find a way at length into her inner chambers. And to make my meaning clearer and to familiarize the thing by giving it a name, I have chosen to call one of these methods or ways *Anticipation of the Mind,* the other *Interpretation of Nature.*

Moreover I have one request to make. I have on my own part made it my care and study that the things which I shall propound should not only be true, but should also be presented to men's minds, how strangely soever preoccupied and obstructed, in a manner not harsh or unpleasant. It is but reasonable however (especially in so great a restoration of learning and knowledge) that I should claim of men one favor in return; which is this:—If anyone would form an opinion or judgment either out of his own observation, or out of the crowd of authorities, or out of the forms of demonstration (which have now acquired a sanction like that of judicial laws), concerning these speculations of mine, let him not hope that he can do it in passage or by the by; but let him examine the thing thoroughly; let him make some little trial for himself of the way which I describe and lay out; let him familiarize his thoughts with that subtlety of nature to which experience bears witness; let him correct by seasonable patience and due delay the depraved and deep-rooted habits of his mind; and when all this is done and he has begun to be his own master, let him (if he will) use his own judgment.

APHORISMS

CONCERNING

THE INTERPRETATION OF NATURE

AND

THE KINGDOM OF MAN

APHORISM

i

MAN, being the servant and interpreter of Nature, can do and understand so much and so much only as he has observed in fact or in thought of the course of nature: beyond this he neither knows anything nor can do anything.

ii

Neither the naked hand nor the understanding left to itself can effect much. It is by instruments and helps that the work is done, which are as much wanted for the understanding as for the hand. And as the instruments of the hand either give motion or guide it, so the instruments of the mind supply either suggestions for the understanding or cautions.

iii

Human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule.

iv

Towards the effecting of works, all that man can do is to put together or put asunder natural bodies. The rest is done by nature working within.

v

The study of nature with a view to works is engaged in by the mechanic, the mathematician, the physician, the alchemist, and the magician; but by all (as things now are) with slight endeavor and scanty success.

vi

It would be an unsound fancy and self-contradictory to expect that things which have never yet been done can be done except by means which have never yet been tried.

vii

The productions of the mind and hand seem very numerous in books and manufactures. But all this variety lies in an exquisite subtlety and derivations from a few things already known; not in the number of axioms.

viii

Moreover the works already known are due to chance and experiment rather than to sciences; for the sciences we now possess are merely systems for the nice ordering and setting forth of things already invented; not methods of invention or directions for new works.

ix

The cause and root of nearly all evils in the sciences is this —that while we falsely admire and extol the powers of the human mind we neglect to seek for its true helps.

x

The subtlety of nature is greater many times over than the subtlety of the senses and understanding; so that all those specious meditations, speculations, and glosses in which men indulge are quite from the purpose, only there is no one by to observe it.

xi

As the sciences which we now have do not help us in finding out new works, so neither does the logic which we now have help us in finding out new sciences.

xii

The logic now in use serves rather to fix and give stability to the errors which have their foundation in commonly received notions, than to help the search after truth. So it does more harm than good.

xiii

The syllogism is not applied to the first principles of sciences, and is applied in vain to intermediate axioms; being no match for the subtlety of nature. It commands assent therefore to the proposition, but does not take hold of the thing.

xiv

The syllogism consists of propositions, propositions consist of words, words are symbols of notions. Therefore if the notions themselves (which is the root of the matter) are confused and over-hastily abstracted from the facts, there can be no firmness in the superstructure. Our only hope therefore lies in a true induction.

xv

There is no soundness in our notions whether logical or physical. Substance, Quality, Action, Passion, Essence itself, are not sound notions: much less are Heavy, Light, Dense, Rare, Moist, Dry, Generation, Corruption, Attraction, Repulsion, Element, Matter, Form, and the like; but all are fantastical and ill defined.

xvi

Our notions of less general species, as Man, Dog, Dove, and of the immediate perceptions of the sense, as Hot, Cold,

Black, White, do not materially mislead us; yet even these are sometimes confused by the flux and alteration of matter and the mixing of one thing with another. All the others which men have hitherto adopted are but wanderings, not being abstracted and formed from things by proper methods.

xvii

Nor is there less of willfulness and wandering in the construction of axioms than in the formations of notions; not excepting even those very principles which are obtained by common induction; but much more in the axioms and lower propositions educed by the syllogism.

xviii

The discoveries which have hitherto been made in the sciences are such as lie close to vulgar notions, scarcely beneath the surface. In order to penetrate into the inner and further recesses of nature, it is necessary that both notions and axioms be derived from things by a more sure and guarded way; and that a method of intellectual operation be introduced altogether better and more certain.

xix

There are and can be only two ways of searching into and discovering truth. The one flies from the senses and particulars to the most general axioms, and from these principles, the truth of which it takes for settled and immovable, proceeds to judgment and to the discovery of middle axioms. And this way is now in fashion. The other derives axioms from the senses and particulars, rising by a gradual and unbroken ascent, so that it arrives at the most general axioms last of all. This is the true way, but as yet untried.

xx

The understanding left to itself takes the same course (namely, the former) which it takes in accordance with

logical order. For the mind longs to spring up to positions of higher generality, that it may find rest there; and so after a little while wearies of experiment. But this evil is increased by logic, because of the order and solemnity of its disputations.

xxi

The understanding left to itself, in a sober, patient, and grave mind, especially if it be not hindered by received doctrines, tries a little that other way, which is the right one, but with little progress; since the understanding, unless directed and assisted, is a thing unequal, and quite unfit to contend with the obscurity of things.

xxii

Both ways set out from the senses and particulars, and rest in the highest generalities; but the difference between them is infinite. For the one just glances at experiment and particulars in passing, the other dwells duly and orderly among them. The one, again, begins at once by establishing certain abstract and useless generalities, the other rises by gradual steps to that which is prior and better known in the order of nature.

xxiii

There is a great difference between the *Idols* of the human mind and the *Ideas* of the divine. That is to say, between certain empty dogmas, and the true signatures and marks set upon the works of creation as they are found in nature.

xxiv

It cannot be that axioms established by argumentation should avail for the discovery of new works; since the subtlety of nature is greater many times over than the subtlety of argument. But axioms duly and orderly formed from

particulars easily discover the way to new particulars, and thus render sciences active.

xxv

The axioms now in use, having been suggested by a scanty and manipular experience and a few particulars of most general occurrence, are made for the most part just large enough to fit and take these in: and therefore it is no wonder if they do not lead to new particulars. And if some opposite instance, not observed or not known before, chance to come in the way, the axiom is rescued and preserved by some frivolous distinction; whereas the truer course would be to correct the axiom itself.

xxvi

The conclusions of human reason as ordinarily applied in matter of nature, I call for the sake of distinction *Anticipations of Nature* (as a thing rash or premature). That reason which is elicited from facts by a just and methodical process, I call *Interpretation of Nature.*

xxvii

Anticipations are a ground sufficiently firm for consent; for even if men went mad all after the same fashion, they might agree one with another well enough.

xxviii

For the winning of assent, indeed, anticipations are far more powerful than interpretations; because being collected from a few instances, and those for the most part of familiar occurrence, they straightway touch the understanding and fill the imagination; whereas interpretations on the other hand, being gathered here and there from very various and widely dispersed facts, cannot suddenly strike the understanding; and therefore they must needs, in respect of the opinions of the time, seem harsh and out of tune; much as the mysteries of faith do.

xxix

In sciences founded on opinions and dogmas, the use of anticipations and logic is good; for in them the object is to command assent to the proposition, not to master the thing.

xxx

Though all the wits of all the ages should meet together and combine and transmit their labors, yet will no great progress ever be made in science by means of anticipations; because radical errors in the first concoction of the mind are not to be cured by the excellence of functions and remedies subsequent.

xxxi

It is idle to expect any great advancement in science from the superinducing and engrafting of new things upon old. We must begin anew from the very foundations, unless we would revolve for ever in a circle with mean and contemptible progress.

xxxii

The honor of the ancient authors, and indeed of all, remains untouched; since the comparison I challenge is not of wits or faculties, but of ways and methods, and the part I take upon myself is not that of a judge, but of a guide.

xxxiii

This must be plainly avowed: no judgment can be rightly formed either of my method or of the discoveries to which it leads, by means of anticipations (that is to say, of the reasoning which is now in use); since I cannot be called on to abide by the sentence of a tribunal which is itself on its trial.

xxxiv

Even to deliver and explain what I bring forward is no easy matter; for things in themselves new will yet be apprehended with reference to what is old.

xxxv

It was said by Borgia of the expedition of the French into Italy, that they came with chalk in their hands to mark out their lodgings, not with arms to force their way in. I in like manner would have my doctrine enter quietly into the minds that are fit and capable of receiving it; for confutations cannot be employed, when the difference is upon first principles and very notions and even upon forms of demonstration.

xxxvi

One method of delivery alone remains to us; which is simply this: we must lead men to the particulars themselves, and their series and order; while men on their side must force themselves for awhile to lay their notions by and begin to familiarize themselves with facts.

xxxvii

The doctrine of those who have denied that certainty could be attained at all, has some agreement with my way of proceeding at the first setting out; but they end in being infinitely separated and opposed. For the holders of that doctrine assert simply that nothing can be known; I also assert that not much can be known in nature by the way which is now in use. But then they go on to destroy the authority of the senses and understanding; whereas I proceed to devise and supply helps for the same.

xxxviii

The idols and false notions which are now in possession of the human understanding, and have taken deep root therein, not only so beset men's minds that truth can hardly find entrance, but even after entrance obtained, they will again in the very instauration of the sciences meet and trouble us, unless men being forewarned of the danger fortify themselves as far as may be against their assaults.

xxxix

There are four classes of Idols which beset men's minds. To these for distinction's sake I have assigned names,—calling the first class *Idols of the Tribe;* the second, *Idols of the Cave;* the third, *Idols of the Market-place;* the fourth, *Idols of the Theater.*

xl

The formation of ideas and axioms by true induction is no doubt the proper remedy to be applied for the keeping off and clearing away of idols. To point them out, however, is of great use; for the doctrine of Idols is to the Interpretation of Nature what the doctrine of the refutation of sophisms is to common logic.

xli

The Idols of the Tribe have their foundation in human nature itself, and in the tribe or race of men. For it is a false assertion that the sense of man is the measure of things. On the contrary, all perceptions, as well of the sense as of the mind, are according to the measure of the individual and not according to the measure of the universe. And the human understanding is like a false mirror, which, receiving rays irregularly, distorts and discolors the nature of things by mingling its own nature with it.

xlii

The Idols of the Cave are the idols of the individual man. For everyone (besides the errors common to human nature in general) has a cave or den of his own, which refracts and discolors the light of nature; owing either to his own proper and peculiar nature; or to his education and conversation with others; or to the reading of books, and the authority of those whom he esteems and admires; or to the differences of impressions, accordingly as they take place in a mind preoccupied and predisposed or in a mind indifferent and settled; or the like. So that the spirit of man (according as it is meted

out to different individuals) is in fact a thing variable and full of perturbation, and governed as it were by chance. Whence it was well observed by Heraclitus that men look for sciences in their own lesser worlds, and not in the greater or common world.

xliii

There are also idols formed by the intercourse and association of men with each other, which I call Idols of the Marketplace, on account of the commerce and consort of men there. For it is by discourse that men associate; and words are imposed according to the apprehension of the vulgar. And therefore the ill and unfit choice of words wonderfully obstructs the understanding. Nor do the definitions or explanations wherewith in some things learned men are wont to guard and defend themselves, by any means set the matter right. But words plainly force and overrule the understanding, and throw all into confusion, and lead men away into numberless empty controversies and idle fancies.

xliv

Lastly, there are Idols which have immigrated into men's minds from the various dogmas of philosophies, and also from wrong laws of demonstration. These I call Idols of the Theater; because in my judgment all the received systems are but so many stage-plays, representing worlds of their own creation after an unreal and scenic fashion. Nor is it only of the systems now in vogue, or only of the ancient sects and philosophies, that I speak: for many more plays of the same kind may yet be composed and in like artificial manner set forth; seeing that errors the most widely different have nevertheless causes for the most part alike. Neither again do I mean this only of entire systems, but also of many principles and axioms in science, which by tradition, credulity, and negligence have come to be received.

But of these several kinds of Idols I must speak more

largely and exactly, that the understanding may be duly cautioned.

xlv

The human understanding is of its own nature prone to suppose the existence of more order and regularity in the world than it finds. And though there be many things in nature which are singular and unmatched, yet it devises for them parallels and conjugates and relatives which do not exist. Hence the fiction that all celestial bodies move in perfect circles; spirals and dragons being (except in name) utterly rejected. Hence too the element of Fire with its orb is brought in, to make up the square with the other three which the sense perceives. Hence also the ratio of density of the so-called elements is arbitrarily fixed at ten to one. And so on of other dreams. And these fancies affect not dogmas only, but simple notions also.

xlvi

The human understanding when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects; in order that by this great and pernicious predetermination the authority of its former conclusions may remain inviolate. And therefore it was a good answer that was made by one who when they showed him hanging in a temple a picture of those who had paid their vows as having escaped shipwreck, and would have him say whether he did not now acknowledge the power of the gods,—"Aye," asked he again, "but where are they painted that were drowned after their vows?" And such is the way of all superstition, whether in astrology, dreams, omens, divine judgments, or the like; wherein men, having a delight in such vanities, mark the events where they are fulfilled, but where they fail, though

this happen much oftener, neglect and pass them by. But with far more subtlety does this mischief insinuate itself into philosophy and the sciences; in which the first conclusion colors and brings into conformity with itself all that come after, though far sounder and better. Besides, independently of that delight and vanity which I have described, it is the peculiar and perpetual error of the human intellect to be more moved and excited by affirmatives than by negatives; whereas it ought properly to hold itself indifferently disposed towards both alike. Indeed in the establishment of any true axiom, the negative instance is the more forcible of the two.

xlvii

The human understanding is moved by those things most which strike and enter the mind simultaneously and suddenly, and so fill the imagination; and then it feigns and supposes all other things to be somehow, though it cannot see how, similar to those few things by which it is surrounded. But for that going to and fro to remote and heterogeneous instances, by which axioms are tried as in the fire, the intellect is altogether slow and unfit, unless it be forced thereto by severe laws and overruling authority.

xlviii

The human understanding is unquiet; it cannot stop or rest, and still presses onward, but in vain. Therefore it is that we cannot conceive of any end or limit to the world; but always as of necessity it occurs to us that there is something beyond. Neither again can it be conceived how eternity has flowed down to the present day: for that distinction which is commonly received of infinity in time past and in time to come can by no means hold; for it would thence follow that one infinity is greater than another, and that infinity is wasting away and tending to become finite. The like subtlety arises touching the infinite divisibility of lines, from the same inability of thought to stop. But this inability interferes more

mischievously in the discovery of causes: for although the most general principles in nature ought to be held merely positive, as they are discovered, and cannot with truth be referred to a cause; nevertheless the human understanding being unable to rest still seeks something prior in the order of nature. And then it is that in struggling towards that which is further off it falls back upon that which is more nigh at hand,—namely, on final causes; which have relation clearly to the nature of man rather than to the nature of the universe, and from this source have strangely defiled philosophy. But he is no less an unskilled and shallow philosopher who seeks causes of that which is most general, than he who in things subordinate and subaltern omits to do so.

xlix

The human understanding is no dry light, but receives an infusion from the will and affections; whence proceed sciences which may be called 'sciences as one would.' For what a man had rather were true he more readily believes. Therefore he rejects difficult things from impatience of research; sober things, because they narrow hope; the deeper things of nature, from superstition; the light of experience, from arrogance and pride, lest his mind should seem to be occupied with things mean and transitory; things not commonly believed, out of deference to the opinion of the vulgar. Numberless in short are the ways, and sometimes imperceptible, in which the affections color and infect the understanding.

l

But by far the greatest hindrance and aberration of the human understanding proceeds from the dullness, incompetency, and deceptions of the senses; in that things which strike the sense outweigh things which do not immediately strike it, though they be more important. Hence it is that speculation commonly ceases where sight ceases, insomuch that of things invisible there is little or no observation.

Hence all the working of the spirits inclosed in tangible bodies lies hid and unobserved of men. So also all the more subtle changes of form in the parts of coarser substances (which they commonly call alteration, though it is in truth local motion through exceedingly small spaces) is in like manner unobserved. And yet unless these two things just mentioned be searched out and brought to light, nothing great can be achieved in nature, as far as the production of works is concerned. So again the essential nature of our common air, and of all bodies less dense than air (which are very many), is almost unknown. For the sense by itself is a thing infirm and erring; neither can instruments for enlarging or sharpening the senses do much: but all the truer kind of interpretation of nature is effected by instances and experiments fit and apposite; wherein the sense decides touching the experiment only, and the experiment touching the point in nature and the thing itself.

li

The human understanding is of its own nature prone to abstractions and gives a substance and reality to things which are fleeting. But to resolve nature into abstractions is less to our purpose than to dissect her into parts; as did the school of Democritus, which went further into nature than the rest. Matter rather than forms should be the object of our attention, its configurations and changes of configuration, and simple action, and law of action or motion; for forms are figments of the human mind, unless you will call those laws of action forms.

lii

Such then are the idols which I call *Idols of the Tribe;* and which take their rise either from the homogeneity of the substance of the human spirit, or from its preoccupation, or from its narrowness, or from its restless motion, or from an infusion of the affections, or from the incompetency of the senses, or from the mode of impression.

liii

The *Idols of the Cave* take their rise in the peculiar constitution, mental or bodily, of each individual; and also in education, habit, and accident. Of this kind there is a great number and variety; but I will instance those the pointing out of which contains the most important caution, and which have most effect in disturbing the clearness of the understanding.

liv

Men become attached to certain particular sciences and speculations, either because they fancy themselves the authors and inventors thereof, or because they have bestowed the greatest pains upon them and become most habituated to them. But men of this kind, if they betake themselves to philosophy and contemplations of a general character, distort and color them in obedience to their former fancies; a thing especially to be noticed in Aristotle, who made his natural philosophy a mere bond-servant to his logic, thereby rendering it contentious and well nigh useless. The race of chemists again out of a few experiments of the furnace have built up a fantastic philosophy, framed with reference to a few things; and Gilbert also, after he had employed himself most laboriously in the study and observation of the lodestone, proceeded at once to construct an entire system in accordance with his favorite subject.

lv

There is one principal and as it were radical distinction between different minds, in respect of philosophy and the sciences; which is this: that some minds are stronger and apter to mark the differences of things, others to mark their resemblances. The steady and acute mind can fix its contemplations and dwell and fasten on the subtlest distinctions; the lofty and discursive mind recognizes and puts together the finest and most general resemblances. Both kinds however easily err in excess, by catching the one at gradations the other at shadows.

lvi

There are found some minds given to an extreme admiration of antiquity, others to an extreme love and appetite for novelty; but few so duly tempered that they can hold the mean, neither carping at what has been well laid down by the ancients, nor despising what is well introduced by the moderns. This however turns to the great injury of the sciences and philosophy: since these affectations of antiquity and novelty are the humors of partisans rather than judgments; and truth is to be sought for not in the felicity of any age, which is an unstable thing, but in the light of nature and experience, which is eternal. These factions therefore must be abjured, and care must be taken that the intellect be not hurried by them into assent.

lvii

Contemplations of nature and of bodies in their simple form break up and distract the understanding, while contemplations of nature and bodies in their composition and configuration overpower and dissolve the understanding: a distinction well seen in the school of Leucippus and Democritus as compared with the other philosophies. For that school is so busied with the particles that it hardly attends to the structure; while the others are so lost in admiration of the structure that they do not penetrate to the simplicity of nature. These kinds of contemplation should therefore be alternated and taken by turns; that so the understanding may be rendered at once penetrating and comprehensive, and the inconveniences above mentioned, with the idols which proceed from them, may be avoided.

lviii

Let such then be our provision and contemplative prudence for keeping off and dislodging the Idols of the Cave, which grow for the most part either out of the predominance of a favorite subject, or out of an excessive tendency to compare

or to distinguish, or out of partiality for particular ages, or out of the largeness or minuteness of the objects contemplated. And generally let every student of nature take this as a rule,—that whatever his mind seizes and dwells upon with peculiar satisfaction is to be held in suspicion, and that so much the more care is to be taken in dealing with such questions to keep the understanding even and clear.

lix

But the *Idols of the Market-place* are the most troublesome of all: idols which have crept into the understanding through the alliances of words and names. For men believe that their reason governs words; but it is also true that words react on the understanding; and this it is that has rendered philosophy and the sciences sophistical and inactive. Now words, being commonly framed and applied according to the capacity of the vulgar, follow those lines of division which are most obvious to the vulgar understanding. And whenever an understanding of greater acuteness or a more diligent observation would alter those lines to suit the true divisions of nature, words stand in the way and resist the change. Whence it comes to pass that the high and formal discussions of learned men end oftentimes in disputes about words and names; with which (according to the use and wisdom of the mathematicians) it would be more prudent to begin, and so by means of definitions reduce them to order. Yet even definitions cannot cure this evil in dealing with natural and material things; since the definitions themselves consist of words, and those words beget others: so that it is necessary to recur to individual instances, and those in due series and order; as I shall say presently when I come to the method and scheme for the formation of notions and axioms.

lx

The Idols imposed by words on the understanding are of two kinds. They are either names of things which do not

exist (for as there are things left unnamed through lack of observation, so likewise are there names which result from fantastic suppositions and to which nothing in reality corresponds), or they are names of things which exist, but yet confused and ill-defined, and hastily and irregularly derived from realities. Of the former kind are Fortune, the Prime Mover, Planetary Orbits, Element of Fire, and like fictions which owe their origin to false and idle theories. And this class of idols is more easily expelled, because to get rid of them it is only necessary that all theories should be steadily rejected and dismissed as obsolete.

But the other class, which springs out of a faulty and unskillful abstraction, is intricate and deeply rooted. Let us take for example such a word as *humid,* and see how far the several things which the word is used to signify agree with each other; and we shall find the word *humid* to be nothing else than a mark loosely and confusedly applied to denote a variety of actions which will not bear to be reduced to any constant meaning. For it both signifies that which easily spreads itself round any other body; and that which in itself is indeterminate and cannot solidize; and that which readily yields in every direction; and that which easily divides and scatters itself; and that which easily unites and collects itself; and that which readily flows and is put in motion; and that which readily clings to another body and wets it; and that which is easily reduced to a liquid, or being solid easily melts. Accordingly when you come to apply the word,—if you take it in one sense, flame is humid; if in another, air is not humid; if in another, fine dust is humid; if in another, glass is humid. So that it is easy to see that the notion is taken by abstraction only from water and common and ordinary liquids, without any due verification.

There are however in words certain degrees of distortion and error. One of the least faulty kinds is that of names of substances, especially of lowest species and well-deduced (for the notion of *chalk* and of *mud* is good, of *earth* bad); a more faulty kind is that of actions, as *to generate, to corrupt, to*

alter; the most faulty is of qualities (except such as are the immediate objects of the sense) as *heavy, light, rare, dense,* and the like. Yet in all these cases some notions are of necessity a little better than others, in proportion to the greater variety of subjects that fall within the range of the human sense.

lxi

But the *Idols of the Theater* are not innate, nor do they steal into the understanding secretly, but are plainly impressed and received into the mind from the play-books of philosophical systems and the perverted rules of demonstration. To attempt refutations in this case would be merely inconsistent with what I have already said: for since we agree neither upon principles nor upon demonstrations there is no place for argument. And this is so far well, inasmuch as it leaves the honor of the ancients untouched. For they are no wise disparaged—the question between them and me being only as to the way. For as the saying is, the lame man who keeps the right road outstrips the runner who takes a wrong one. Nay it is obvious that when a man runs the wrong way, the more active and swift he is the further he will go astray.

But the course I propose for the discovery of sciences is such as leaves but little to the acuteness and strength of wits, but places all wits and understandings nearly on a level. For as in the drawing of a straight line or a perfect circle, much depends on the steadiness and practice of the hand, if it be done by aim of hand only, but if with the aid of rule or compass, little or nothing; so is it exactly with my plan. But though particular confutations would be of no avail, yet touching the sects and general divisions of such systems I must say something; something also touching the external signs which show that they are unsound; and finally something touching the causes of such great infelicity and of such lasting and general agreement in error; that so the access to truth may be made less difficult, and the human understanding may the more willingly submit to its purgation and dismiss its idols.

lxii

Idols of the Theater, or of Systems, are many, and there can be and perhaps will be yet many more. For were it not that now for many ages men's minds have been busied with religion and theology; and were it not that civil governments, especially monarchies, have been averse to such novelties, even in matters speculative; so that men labor therein to the peril and harming of their fortunes,—not only unrewarded, but exposed also to contempt and envy: doubtless there would have arisen many other philosophical sects like to those which in great variety flourished once among the Greeks. For as on the phenomena of the heavens many hypotheses may be constructed, so likewise (and more also) many various dogmas may be set up and established on the phenomena of philosophy. And in the plays of this philosophical theater you may observe the same thing which is found in the theater of the poets, that stories invented for the stage are more compact and elegant, and more as one would wish them to be, than true stories out of history.

In general however there is taken for the material of philosophy either a great deal out of a few things, or a very little out of many things; so that on both sides philosophy is based on too narrow a foundation of experiment and natural history, and decides on the authority of too few cases. For the rational school of philosophers snatches from experience a variety of common instances, neither duly ascertained nor diligently examined and weighed, and leaves all the rest to meditation and agitation of wit.

There is also another class of philosophers, who having bestowed much diligent and careful labor on a few experiments, have thence made bold to educe and construct systems; wresting all other facts in a strange fashion to conformity therewith.

And there is yet a third class, consisting of those who out of faith and veneration mix their philosophy with theology and traditions; among whom the vanity of some has gone so far aside as to seek the origin of sciences among spirits and

genii. So that this parent stock of errors—this false philosophy—is of three kinds; the *sophistical,* the *empirical,* and the *superstitious.*

lxiii

The most conspicuous example of the first class was Aristotle, who corrupted natural philosophy by his logic: fashioning the world out of categories; assigning to the human soul, the noblest of substances, a genus from words of the second intention; doing the business of density and rarity (which is to make bodies of greater or less dimensions, that is, occupy greater or less spaces), by the frigid distinction of act and power; asserting that single bodies have each a single and proper motion, and that if they participate in any other, then this results from an external cause; and imposing countless other arbitrary restrictions on the nature of things: being always more solicitous to provide an answer to the question and affirm something positive in words, than about the inner truth of things; a failing best shown when his philosophy is compared with other systems of note among the Greeks. For the *homœomera* of Anaxagoras; the atoms of Leucippus and Democritus; the Heaven and Earth of Parmenides; the Strife and Friendship of Empedocles; Heraclitus's doctrine how bodies are resolved into the indifferent nature of fire, and remolded into solids; have all of them some taste of the natural philosopher,—some savor of the nature of things, and experience, and bodies; whereas in the physics of Aristotle you hear hardly anything but the words of logic; which in his metaphysics also, under a more imposing name, and more forsooth as a realist than a nominalist, he has handled over again. Nor let any weight be given to the fact that in his books on animals, and his *Problems,* and other of his treatises, there is frequent dealing with experiments. For he had come to his conclusion before: he did not consult experience, as he should have done, in order to the framing of his decisions and axioms; but having first determined the question according to his will, he then resorts to experience, and bending

her into conformity with his placets leads her about like a captive in a procession: so that even on this count he is more guilty than his modern followers, the schoolmen, who have abandoned experience altogether.

lxiv

But the empirical school of philosophy gives birth to dogmas more deformed and monstrous than the sophistical or rational school. For it has its foundations not in the light of common notions (which, though it be a faint and superficial light, is yet in a manner universal, and has reference to many things) but in the narrowness and darkness of a few experiments. To those therefore who are daily busied with these experiments, and have infected their imagination with them, such a philosophy seems probable and all but certain; to all men else incredible and vain. Of this there is a notable instance in the alchemists and their dogmas; though it is hardly to be found elsewhere in these times, except perhaps in the philosophy of Gilbert. Nevertheless with regard to philosophies of this kind there is one caution not to be omitted; for I foresee that if ever men are roused by my admonitions to betake themselves seriously to experiment and bid farewell to sophistical doctrines, then indeed through the premature hurry of the understanding to leap or fly to universals and principles of things, great danger may be apprehended from philosophies of this kind; against which evil we ought even now to prepare.

lxv

But the corruption of philosophy by superstition and an admixture of theology is far more widely spread, and does the greatest harm, whether to entire systems or to their parts. For the human understanding is obnoxious to the influence of the imagination no less than to the influence of common notions. For the contentious and sophistical kind of philosophy ensnares the understanding; but this kind, being fanciful

and tumid and half poetical, misleads it more by flattery. For there is in man an ambition of the understanding, no less than of the will, especially in high and lofty spirits.

Of this kind we have among the Greeks a striking example in Pythagoras, though he united with it a coarser and more cumbrous superstition; another in Plato and his school, more dangerous and subtle. It shows itself likewise in parts of other philosophies, in the introduction of abstract forms and final causes and first causes, with the omission in most cases of causes intermediate, and the like. Upon this point the greatest caution should be used. For nothing is so mischievous as the apotheosis of error; and it is a very plague of the understanding for vanity to become the object of veneration. Yet in this vanity some of the moderns have with extreme levity indulged so far as to attempt to found a system of natural philosophy on the first chapters of Genesis, on the book of Job, and other parts of the sacred writings; seeking for the dead among the living: which also makes the inhibition and repression of it the more important, because from this unwholesome mixture of things human and divine there arises not only a fantastic philosophy but also an heretical religion. Very meet it is therefore that we be sober-minded, and give to faith that only which is faith's.

lxvi

So much then for the mischievous authorities of systems, which are founded either on common notions, or on a few experiments, or on superstition. It remains to speak of the faulty subject-matter of contemplations, especially in natural philosophy. Now the human understanding is infected by the sight of what takes place in the mechanical arts, in which the alteration of bodies proceeds chiefly by composition or separation, and so imagines that something similar goes on in the universal nature of things. From this source has flowed the fiction of elements, and of their concourse for the formation of natural bodies. Again, when man contemplates nature working freely, he meets with different species of things, of

animals, of plants, of minerals; whence he readily passes into the opinion that there are in nature certain primary forms which nature intends to educe, and that the remaining variety proceeds from hindrances and aberrations of nature in the fulfilment of her work, or from the collision of different species and the transplanting of one into another. To the first of these speculations we owe our primary qualities of the elements; to the other our occult properties and specific virtues; and both of them belong to those empty *compendia* of thought wherein the mind rests, and whereby it is diverted from more solid pursuits. It is to better purpose that the physicians bestow their labor on the secondary qualities of matter, and the operations of attraction, repulsion, attenuation, conspissation, dilatation, astriction, dissipation, maturation, and the like; and were it not that by those two compendia which I have mentioned (elementary qualities, to wit, and specific virtues) they corrupted their correct observations in these other matters,—either reducing them to first qualities and their subtle and incommensurable mixtures, or not following them out with greater and more diligent observation to third and fourth qualities, but breaking off the scrutiny prematurely,—they had made much greater progress. Nor are powers of this kind (I do not say the same, but similar) to be sought for only in the medicines of the human body, but also in the changes of all other bodies.

But it is a far greater evil that they make the quiescent principles, *wherefrom,* and not the moving principles, *whereby,* things are produced, the object of their contemplation and inquiry. For the former tend to discourse, the latter to works. Nor is there any value in those vulgar distinctions of motion which are observed in the received system of natural philosophy, as generation, corruption, augmentation, diminution, alteration, and local motion. What they mean no doubt is this: If a body, in other respects not changed, be moved from its place, this is *local motion;* if without change of place or essence, it be changed in quality, this is *alteration;* if by reason of the change the mass and quantity of the body do

not remain the same, this is *augmentation* or *diminution;* if they be changed to such a degree that they change their very essence and substance and turn to something else, this is *generation* and *corruption.* But all this is merely popular, and does not at all go deep into nature; for these are only measures and limits, not kinds of motion. What they intimate is *how far,* not *by what means,* or *from what source.* For they do not suggest anything with regard either to the desires of bodies or to the development of their parts: it is only when that motion presents the thing grossly and palpably to the sense as different from what it was, that they begin to mark the division. Even when they wish to suggest something with regard to the causes of motion, and to establish a division with reference to them, they introduce with the greatest negligence a distinction between motion natural and violent; a distinction which is itself drawn entirely from a vulgar notion, since all violent motion is also in fact natural; the external efficient simply setting nature working otherwise than it was before. But if, leaving all this, anyone shall observe (for instance) that there is in bodies a desire of mutual contact, so as not to suffer the unity of nature to be quite separated or broken and a vacuum thus made; or if anyone say that there is in bodies a desire of resuming their natural dimensions or tension, so that if compressed within or extended beyond them, they immediately strive to recover themselves, and fall back to their old volume and extent; or if anyone say that there is in bodies a desire of congregating towards masses of kindred nature,—of dense bodies, for instance, towards the globe of the earth, of thin and rare bodies towards the compass of the sky; all these and the like are truly physical kinds of motion;—but those others are entirely logical and scholastic, as is abundantly manifest from this comparison.

Nor again is it a less evil, that in their philosophies and contemplations their labor is spent in investigating and handling the first principles of things and the highest generalities of nature; whereas utility and the means of working

result entirely from things intermediate. Hence it is that men cease not from abstracting nature till they come to potential and uninformed matter, nor on the other hand from dissecting nature till they reach the atom; things which, even if true, can do but little for the welfare of mankind.

lxvii

A caution must also be given to the understanding against the intemperance which systems of philosophy manifest in giving or withholding assent; because intemperance of this kind seems to establish Idols and in some sort to perpetuate them, leaving no way open to reach and dislodge them.

This excess is of two kinds: the first being manifest in those who are ready in deciding; and render sciences dogmatic and magisterial; the other in those who deny that we can know anything, and so introduce a wandering kind of inquiry that leads to nothing; of which kinds the former subdues, the latter weakens the understanding. For the philosophy of Aristotle, after having by hostile confutations destroyed all the rest (as the Ottomans serve their brothers), has laid down the law on all points: which done, he proceeds himself to raise new questions of his own suggestion, and dispose of them likewise; so that nothing may remain that is not certain and decided,—a practice which holds and is in use among his successors.

The school of Plato, on the other hand, introduced *Acatalepsia,* at first in jest and irony, and in disdain of the older sophists, Protagoras, Hippias, and the rest, who were of nothing else so much ashamed as of seeming to doubt about anything. But the New Academy made a dogma of it, and held it as a tenet. And though theirs is a fairer seeming way than arbitrary decisions; since they say that they by no means destroy all investigation, like Pyrrho and his Refrainers, but allow of some things to be followed as probable, though of none to be maintained as true; yet still when the human mind has once despaired of finding truth, its interest in all things grows fainter; and the result is that men turn aside to

pleasant disputations and discourses and roam as it were from object to object, rather than keep on a course of severe inquisition. But, as I said at the beginning and am ever urging, the human senses and understanding, weak as they are, are not to be deprived of their authority, but to be supplied with helps.

lxviii

So much concerning the several classes of Idols, and their equipage: all of which must be renounced and put away with a fixed and solemn determination, and the understanding thoroughly freed and cleansed; the entrance into the kingdom of man, founded on the sciences, being not much other than the entrance into the kingdom of heaven, whereinto none may enter except as a little child.

lxix

But vicious demonstrations are as the strongholds and defences of Idols; and those we have in logic do little else than make the world the bond-slave of human thought, and human thought the bond-slave of words. Demonstrations truly are in effect the philosophies themselves and the sciences. For such as *they* are, well or ill established, such are the systems of philosophy and the contemplations which follow. Now in the whole of the process which leads from the sense and objects to axioms and conclusions, the demonstrations which we use are deceptive and incompetent. This process consists of four parts, and has as many faults. In the first place, the impressions of the sense itself are faulty; for the sense both fails us and deceives us. But its shortcomings are to be supplied, and its deceptions to be corrected. Secondly, notions are ill drawn from the impressions of the senses, and are indefinite and confused, whereas they should be definite and distinctly bounded. Thirdly, the induction is amiss which infers the principles of sciences by simple enumeration, and does not, as it ought, employ exclusions and solutions (or separations) of nature. Lastly, that method of discovery and

proof according to which the most general principles are first established, and then intermediate axioms are tried and proved by them, is the parent of error and the curse of all science. Of these things however, which now I do but touch upon, I will speak more largely, when, having performed these expiations and purgings of the mind, I come to set forth the true way for the interpretation of nature.

lxx

But the best demonstration by far is experience, if it go not beyond the actual experiment. For if it be transferred to other cases which are deemed similar, unless such transfer be made by a just and orderly process, it is a fallacious thing. But the manner of making experiments which men now use is blind and stupid. And therefore, wandering and straying as they do with no settled course, and taking counsel only from things as they fall out, they fetch a wide circuit and meet with many matters, but make little progress; and sometimes are full of hope, sometimes are distracted; and always find that there is something beyond to be sought. For it generally happens that men make their trials carelessly, and as it were in play; slightly varying experiments already known, and, if the thing does not answer, growing weary and abandoning the attempt. And even if they apply themselves to experiments more seriously and earnestly and laboriously, still they spend their labor in working out some one experiment, as Gilbert with the magnet, and the chemists with gold,—a course of proceeding not less unskillful in the design than small in the attempt. For no one successfully investigates the nature of a thing in the thing itself; the inquiry must be enlarged, so as to become more general.

And even when they seek to educe some science or theory from their experiments, they nevertheless almost always turn aside with overhasty and unseasonable eagerness to practice; not only for the sake of the uses and fruits of the practice, but from impatience to obtain in the shape of some new work an assurance for themselves that it is worth their while to go on;

and also to show themselves off to the world, and so raise the credit of the business in which they are engaged. Thus, like Atalanta, they go aside to pick up the golden apple, but meanwhile they interrupt their course, and let the victory escape them. But in the true course of experience, and in carrying it on to the effecting of new works, the divine wisdom and order must be our pattern. Now God on the first day of creation created light only, giving to that work an entire day, in which no material substance was created. So must we likewise from experience of every kind first endeavor to discover true causes and axioms; and seek for experiments of Light, not for experiments of Fruit. For axioms rightly discovered and established supply practice with its instruments, not one by one, but in clusters, and draw after them trains and troops of works. Of the paths however of experience, which no less than the paths of judgment are impeded and beset, I will speak hereafter; here I have only mentioned ordinary experimental research as a bad kind of demonstration. But now the order of the matter in hand leads me to add something both as to those *signs* which I lately mentioned,—signs that the system of philosophy and contemplation in use are in a bad condition,—and also as to the *causes* of what seems at first so strange and incredible. For a knowledge of the signs prepares assent; an explanation of the causes removes the marvel: which two things will do much to render the extirpation of Idols from the understanding more easy and gentle . . .

[Aphorisms lxxi to xci, here omitted, fall into two groups: lxxi to lxxviii treat of the signs that show the defective and impotent character of the received sciences; lxxix to xci treat of the causes of those errors that have prevented or hindered the progress of the sciences.

The signs of truth and soundness in the received sciences are to be drawn "from their origin, or from their fruits, or from their progress, or from the confessions of their founders, or from general consent." The sciences we possess mainly originated with the Greeks. But "the character of that country and nation" predis-

posed them to disputation rather than inquiry; the Greeks are like boys, "they are prompt to prattle, but cannot generate; for their wisdom abounds in words but is barren of works." Nor was the character of the time and age propitious for science: they had no history, and in comparison with our stock of knowledge and experience were but ignorant youths. As to the fruits of their knowledge, they have been but the "thorns and briars of dispute and contention." These ignorant and disputatious systems have shown change without progress: "For what is founded on nature grows and increases; while what is founded on opinion varies but increases not." Again, by their constant "complaints of the subtlety of nature, the obscurity of things, and the weakness of the human mind," and their perpetual strife among themselves, they confess the futility of their pretentions. And, finally, the supposal that there was, eventually, among the ancients, general consent to the authority of Aristotle is false: "the systems of Aristotle and Plato, like planks of lighter and less solid material, floated on the waves of time and were preserved"; "time, like a river, bringing down to us things which are light and puffed up, but letting weighty matters sink."

The causes of those errors that have hindered the progress of the sciences are many and potent. First, the actual periods within which science has been cultivated have been very short: only the Greeks, the Romans, and, in recent times, the nations of Western Europe have for short intervals seriously improved our knowledge. And throughout all time, the greater part of wit and diligence has been devoted to moral philosophy, as with the ancients, or to theology, among the moderns, rather than to natural philosophy which is "the great mother of the sciences." Again, the goal itself has not been rightly placed, men have sought through their studies gain or reputation, or to justify old truth, rather than to search out things undiscovered. "Now the true and lawful goal of the sciences is none other than this: that human life be endowed with new discoveries and powers." Since men have so rarely pursued this end, it is not strange that they have erred as to the means. Or, when men have placed the goal aright, they have chosen a way to it erroneous and impossible: instead of the "opening and laying out of a road for the human understanding direct from the sense, by a course of experiment orderly conducted and well build up," all has been "left either to

the mist of tradition, or the whirl and eddy of argument, or the fluctuations and mazes of chance and of vague and ill-digested experience." Thus "the admiration of antiquity, authority, and consent" has caused men to be content with the poverty and scantiness of existing knowledge. "Moreover the ancient systems have received no slight accession of reputation and credit from the vanity and levity of those who have propounded new ones." Another troublesome adversary that has afflicted natural philosophy in all ages is "superstition, and the blind and immoderate zeal of religion." Those who thus confuse natural philosophy with theology feel the search after natural causes to be an impiety, or they consider "that if second causes are unknown everything can more readily be referred to the divine hand and rod," or they "fear from past example that movements and changes in philosophy will end in assaults on religion . . . But these two last fears seem to me to savor utterly of carnal wisdom; as if men in the recesses and secret thoughts of their hearts doubted and distrusted the strength of religion and the empire of faith over the sense, and therefore feared that the investigation of truth in nature might be dangerous to them. But if the matter be truly considered, natural philosophy is after the word of God at once the surest medicine against superstition, and the most approved nourishment for faith; and therefore she is rightly given to religion as her most faithful handmaid, since the one displays the will of God, the other His power." Again, in the schools, academies, colleges and similar learned bodies everything is found adverse to the progress of science. The "lectures and exercises there are so ordered, that to think or speculate on anything out of the common way can hardly occur to any man." And the vested intellectual interests there seated ignore and contemn all liberty of judgment or originality of spirit. Finally, even if such jealousy were to cease, still true learning goes unrewarded and unhonored, for the reward of learning is in the hands of the unlearned, and "it is nothing strange if a thing not held in honor does not prosper."]

xcii

But by far the greatest obstacle to the progress of science and to the undertaking of new tasks and provinces therein, is found in this—that men despair and think things impossible,

For wise and serious men are wont in these matters to be altogether distrustful; considering with themselves the obscurity of nature, the shortness of life, the deceitfulness of the senses, the weakness of the judgment, the difficulty of experiment and the like; and so supposing that in the revolution of time and of the ages of the world the sciences have their ebbs and flows; that at one season they grow and flourish, at another wither and decay, yet in such sort that when they have reached a certain point and condition they can advance no further. If therefore any one believes or promises more, they think this comes of an ungoverned and unripened mind, and that such attempts have prosperous beginnings, become difficult as they go on, and end in confusion. Now since these are thoughts which naturally present themselves to grave men and of great judgment, we must take good heed that we be not led away by our love for a most fair and excellent object to relax or diminish the severity of our judgment; we must observe diligently what encouragement dawns upon us and from what quarter; and, putting aside the lighter breezes of hope, we must thoroughly sift and examine those which promise greater steadiness and constancy. Nay, and we must take state-prudence too into our counsels, whose rule is to distrust, and to take the less favorable view of human affairs. I am now therefore to speak touching *hope;* especially as I am not a dealer in promises, and wish neither to force nor to ensnare men's judgments, but to lead them by the hand with their good will. And though the strongest means of inspiring hope will be to bring men to particulars; especially to particulars digested and arranged in my Tables of Discovery (the subject partly of the second, but much more of the fourth part of my *Instauration*), since this is not merely the promise of the thing but the thing itself: nevertheless that everything may be done with gentleness, I will proceed with my plan of preparing men's minds; of which preparation to give hope is no unimportant part. For without it the rest tends rather to make men sad (by giving them a worse and meaner opinion of things as they are than they now have, and

making them more fully to feel and know the unhappiness of their own condition) than to induce any alacrity or to whet their industry in making trial. And therefore it is fit that I publish and set forth those conjectures of mine which make hope in this matter reasonable: just as Columbus did, before that wonderful voyage of his across the Atlantic, when he gave the reasons for his conviction that new lands and continents might be discovered besides those which were known before; which reasons, though rejected at first, were afterwards made good by experience, and were the causes and beginnings of great events.

xciii

The beginning is from God: for the business which is in hand, having the character of good so strongly impressed upon it, appears manifestly to proceed from God, who is the Author of Good, and the Father of Lights. Now in divine operations even the smallest beginnings lead of a certainty to their end. And as it was said of spiritual things, "The kingdom of God cometh not with observation," so is it in all the greater works of Divine Providence; everything glides on smoothly and noiselessly, and the work is fairly going on before men are aware that it has begun. Nor should the prophecy of Daniel be forgotten, touching the last ages of the world:—"Many shall go to and fro, and knowledge shall be increased;" clearly intimating that the thorough passage of the world (which now by so many distant voyages seems to be accomplished, or in course of accomplishment), and the advancement of the sciences, are destined by fate, that is, by Divine Providence, to meet in the same age.

xciv

Next comes a consideration of the greatest importance as an argument of hope; I mean that drawn from the errors of past time, and of the ways hitherto trodden. For most excellent was the censure once passed upon a government that had

been unwisely administered. "That which is the worst thing in reference to the past, ought to be regarded as best for the future. For if you had done all that your duty demanded, and yet your affairs were no better, you would not have even a hope left you that further improvement is possible. But now, when your misfortunes are owing, not to the force of circumstances, but to your own errors, you may hope that by dismissing or correcting these errors, a great change may be made for the better." In like manner, if during so long a course of years men had kept the true road for discovering and cultivating sciences, and had yet been unable to make further progress therein, bold doubtless and rash would be the opinion that further progress is possible. But if the road itself has been mistaken, and men's labor spent on unfit objects, it follows that the difficulty has its rise not in things themselves, which are not in our power, but in the human understanding, and the use and application thereof, which admits of remedy and medicine. It will be of great use therefore to set forth what these errors are; for as many impediments as there have been in times past from this cause, so many arguments are there of hope for the time to come. And although they have been partly touched before, I think fit here also, in plain and simple words, to represent them.

XCV

Those who have handled sciences have been either men of experiment or men of dogmas. The men of experiment are like the ant; they only collect and use: the reasoners resemble spiders, who make cobwebs out of their own substance. But the bee takes a middle course, it gathers its material from the flowers of the garden and of the field, but transforms and digests it by a power of its own. Not unlike this is the true business of philosophy: for it neither relies solely or chiefly on the powers of the mind, nor does it take the matter which it gathers from natural history and mechanical experiments and lay it up in the memory whole, as it finds it; but lays it up in the understanding altered and digested. Therefore from a

closer and purer league between these two faculties, the experimental and the rational, (such as has never yet been made) much may be hoped.

xcvi

We have as yet no natural philosophy that is pure; all is tainted and corrupted: in Aristotle's school by logic; in Plato's by natural theology; in the second school of Platonists, such as Proclus and others, by mathematics, which ought only to give definiteness to natural philosophy, not to generate or give it birth. From a natural philosophy pure and unmixed, better things are to be expected.

xcvii

No one has yet been found so firm of mind and purpose as resolutely to compel himself to sweep away all theories and common notions, and to apply the understanding, thus made fair and even, to a fresh examination of particulars. Thus it happens that human knowledge, as we have it, is a mere medley and ill-digested mass, made up of much credulity and much accident, and also of the childish notions which we at first imbibed.

Now if anyone of ripe age, unimpaired senses, and well-purged mind, apply himself anew to experience and particulars, better hopes may be entertained of that man. In which point I promise to myself a like fortune to that of Alexander the Great; and let no man tax me with vanity till he have heard the end; for the thing which I mean tends to the putting off of all vanity. For of Alexander and his deeds Æschines spake thus: "Assuredly we do not live the life of mortal men; but to this end were we born, that in after ages wonders might be told of us;" as if what Alexander had done seemed to him miraculous. But in the next age Titus Livius took a better and a deeper view of the matter, saying in effect, that Alexander "had done no more than take courage to despise vain apprehensions." And a like judgment I suppose may be passed on myself in future ages: that I did no great

things, but simply made less account of things that were accounted great. In the meanwhile, as I have already said, there is no hope except in a new birth of science; that is, in raising it regularly up from experience and building it afresh; which no one (I think) will say has yet been done or thought of.

xcviii

Now for grounds of experience—since to experience we must come—we have as yet had either none or very weak ones; no search has been made to collect a store of particular observations sufficient either in number, or in kind, or in certainty, to inform the understanding, or in any way adequate. On the contrary, men of learning, but easy withal and idle, have taken for the construction or for the confirmation of their philosophy certain rumors and vague fames or airs of experience, and allowed to these the weight of lawful evidence. And just as if some kingdom or state were to direct its counsels and affairs, not by letters and reports from ambassadors and trustworthy messengers, but by the gossip of the streets; such exactly is the system of management introduced into philosophy with relation to experience. Nothing duly investigated, nothing verified, nothing counted, weighed, or measured, is to be found in natural history: and what in observation is loose and vague, is in information deceptive and treacherous. And if anyone thinks that this is a strange thing to say, and something like an unjust complaint, seeing that Aristotle, himself so great a man, and supported by the wealth of so great a king, has composed so accurate a history of animals; and that others with greater diligence, though less pretence, have made many additions; while others, again, have compiled copious histories and descriptions of metals, plants, and fossils; it seems that he does not rightly apprehend what it is that we are now about. For a natural history which is composed for its own sake is not like one that is collected to supply the understanding with information for the building up of philosophy. They differ in many ways, but especially

in this; that the former contains the variety of natural species only, and not experiments of the mechanical arts. For even as in the business of life a man's disposition and the secret workings of his mind and affections are better discovered when he is in trouble than at other times; so likewise the secrets of nature reveal themselves more readily under the vexations of art than when they go their own way. Good hopes may therefore be conceived of natural philosophy, when natural history, which is the basis and foundation of it, has been drawn up on a better plan; but not till then.

xcix

Again, even in the great plenty of mechanical experiments, there is yet a great scarcity of those which are of most use for the information of the understanding. For the mechanic, not troubling himself with the investigation of truth, confines his attention to those things which bear upon his particular work, and will not either raise his mind or stretch out his hand for anything else. But then only will there be good ground of hope for the further advance of knowledge, when there shall be received and gathered together into natural history a variety of experiments, which are of no use in themselves, but simply serve to discover causes and axioms; which I call *experimenta lucifera,* experiments of *light,* to distinguish them from those which I call *fructifera,* experiments of *fruit.*

Now experiments of this kind have one admirable property and condition; they never miss or fail. For since they are applied, not for the purpose of producing any particular effect, but only of discovering the natural cause of some effect, they answer the end equally well whichever way they turn out; for they settle the question.

c

But not only is a greater abundance of experiments to be sought for and procured, and that too of a different kind from those hitherto tried; an entirely different method, order, and process for carrying on and advancing experience must also

be introduced. For experience, when it wanders in its own track, is, as I have already remarked, mere groping in the dark, and confounds men rather than instructs them. But when it shall proceed in accordance with a fixed law, in regular order, and without interruption, then may better things be hoped of knowledge.

ci

But even after such a store of natural history and experience as is required for the work of the understanding, or of philosophy, shall be ready at hand, still the understanding is by no means competent to deal with it off hand and by memory alone; no more than if a man should hope by force of memory to retain and make himself master of the computation of an ephemeris. And yet hitherto more has been done in matter of invention by thinking than by writing; and experience has not yet learned her letters. Now no course of invention can be satisfactory unless it be carried on in writing. But when this is brought into use, and experience has been taught to read and write, better things may be hoped.

cii

Moreover, since there is so great a number and army of particulars, and that army so scattered and dispersed as to distract and confound the understanding, little is to be hoped for from the skirmishings and slight attacks and desultory movements of the intellect, unless all the particulars which pertain to the subject of inquiry shall, by means of Tables of Discovery, apt, well arranged, and as it were animate, be drawn up and marshaled; and the mind be set to work upon the helps duly prepared and digested which these tables supply.

ciii

But after this store of particulars has been set out duly and in order before our eyes, we are not to pass at once to the investigation and discovery of new particulars or works; or

at any rate if we do so we must not stop there. For although I do not deny that when all the experiments of all the arts shall have been collected and digested, and brought within one man's knowledge and judgment, the mere transferring of the experiments of one art to others may lead, by means of that experience which I term *literate,* to the discovery of many new things of service to the life and state of man; yet it is no great matter that can be hoped from that: but from the new light of axioms, which having been educed from those particulars by a certain method and rule, shall in their turn point out the way again to new particulars, greater things may be looked for. For our road does not lie on a level, but ascends and descends; first ascending to axioms, then descending to works.

civ

The understanding must not however be allowed to jump and fly from particulars to remote axioms and of almost the highest generality (such as the first principles, as they are called, of arts and things), and taking stand upon them as truths that cannot be shaken, proceed to prove and frame the middle axioms by reference to them: which has been the practice hitherto; the understanding being not only carried that way by a natural impulse, but also by the use of syllogistic demonstration trained and inured to it. But then, and then only, may we hope well of the sciences, when in a just scale of ascent, and by successive steps not interrupted or broken, we rise from particulars to lesser axioms; and then to middle axioms, one above the other; and last of all to the most general. For the lowest axioms differ but slightly from bare experience, while the highest and most general (which we now have) are notional and abstract and without solidity. But the middle are the true and solid and living axioms, on which depend the affairs and fortunes of men; and above them again, last of all, those which are indeed the most general,—such I mean as are not abstract, but of which those intermediate axioms are really limitations.

The understanding must not therefore be supplied with wings, but rather hung with weights, to keep it from leaping and flying. Now this has never yet been done; when it is done, we may entertain better hopes of the sciences.

CV

In establishing axioms, another form of induction must be devised than has hitherto been employed; and it must be used for proving and discovering not first principles (as they are called) only, but also the lesser axioms, and the middle, and indeed all. For the induction which proceeds by simple enumeration is childish; its conclusions are precarious, and exposed to peril from a contradictory instance; and it generally decides on too small a number of facts, and on those only which are at hand. But the induction which is to be available for the discovery and demonstration of sciences and arts, must analyze nature by proper rejections and exclusions; and then, after a sufficient number of negatives, come to a conclusion on the affirmative instances: which has not yet been done or even attempted, save only by Plato, who does indeed employ this form of induction to a certain extent for the purpose of discussing definitions and ideas. But in order to furnish this induction or demonstration well and duly for its work, very many things are to be provided which no mortal has yet thought of; insomuch that greater labor will have to be spent in it than has hitherto been spent on the syllogism. And this induction must be used not only to discover axioms, but also in the formation of notions. And it is in this induction that our chief hope lies.

CVI

But in establishing axioms by this kind of induction, we must also examine and try whether the axiom so established be framed to the measure of those particulars only from which it is derived, or whether it be larger and wider. And if it be

larger and wider, we must observe whether by indicating to us new particulars it confirm that wideness and largeness as by a collateral security: that we may not either stick fast in things already known, or loosely grasp at shadows and abstract forms; not at things solid and realized in matter. And when this process shall have come into use, then at last shall we see the dawn of a solid hope.

cvii

And here also should be remembered what was said above concerning the extending of the range of natural philosophy to take in the particular sciences, and the referring or bringing back of the particular sciences to natural philosophy; that the branches of knowledge may not be severed and cut off from the stem. For without this the hope of progress will not be so good.

cviii

So much then for the removing of despair and the raising of hope through the dismissal or rectification of the errors of past time. We must now see what else there is to ground hope upon. And this consideration occurs at once—that if many useful discoveries have been made by accident or upon occasion, when men were not seeking for them but were busy about other things; no one can doubt but that when they apply themselves to seek and make this their business, and that too by method and in order and not by desultory impulses, they will discover far more. For although it may happen once or twice that a man shall stumble on a thing by accident which, when taking great pains to search for it, he could not find; yet upon the whole it unquestionably falls out the other way. And therefore far better things, and more of them, and at shorter intervals, are to be expected from man's reason and industry and direction and fixed application, than from accident and animal instinct and the like, in which inventions have hitherto had their origin.

cix

Another argument of hope may be drawn from this,—that some of the inventions already known are such as before they were discovered it could hardly have entered any man's head to think of; they would have been simply set aside as impossible. For in conjecturing what may be men set before them the example of what has been, and divine of the new with an imagination preoccupied and colored by the old; which way of forming opinions is very fallacious; for streams that are drawn from the springheads of nature do not always run in the old channels.

If, for instance, before the invention of ordnance, a man had described the thing by its effects, and said that there was a new invention, by means of which the strongest towers and walls could be shaken and thrown down at a great distance; men would doubtless have begun to think over all the ways of multiplying the force of catapults and mechanical engines by weights and wheels and such machinery for ramming and projecting: but the notion of a fiery blast suddenly and violently expanding and exploding would hardly have entered into any man's imagination or fancy; being a thing to which nothing immediately analogous had been seen, except perhaps in an earthquake or in lightning, which as *magnalia* or marvels of nature, and by man not imitable, would have been immediately rejected.

In the same way, if before the discovery of silk, anyone had said that there was a kind of thread discovered for the purposes of dress and furniture, which far surpassed the thread of linen or of wool in fineness and at the same time in strength, and also in beauty and softness; men would have begun immediately to think of some silky kind of vegetable, or of the finer hair of some animal, or of the feathers and down of birds; but of a web woven by a tiny worm, and that in such abundance, and renewing itself yearly, they would assuredly never have thought. Nay, if anyone had said anything about a worm, he would no doubt have been laughed at as dreaming of a new kind of cobwebs.

So again, if before the discovery of the magnet, any one had said that a certain instrument had been invented by means of which the quarters and points of the heavens could be taken and distinguished with exactness; men would have been carried by their imagination to a variety of conjectures concerning the more exquisite construction of astronomical instruments; but that anything could be discovered agreeing so well in its movements with the heavenly bodies, and yet not a heavenly body itself, but simply a substance of metal or stone, would have been judged altogether incredible. Yet these things and others like them lay for so many ages of the world concealed from men, nor was it by philosophy or the rational arts that they were found out at last, but by accident and occasion: being indeed, as I said, altogether different in kind and as remote as possible from anything that was known before; so that no preconceived notion could possibly have led to the discovery of them.

There is therefore much ground for hoping that there are still laid up in the womb of nature many secrets of excellent use, having no affinity or parallelism with anything that is now known, but lying entirely out of the beat of the imagination, which have not yet been found out. They too no doubt will some time or other, in the course and revolution of many ages, come to light of themselves, just as the others did; only by the method of which we are now treating they can be speedily and suddenly and simultaneously presented and anticipated.

CX

But we have also discoveries to show of another kind, which prove that noble inventions may be lying at our very feet, and yet mankind may step over without seeing them. For however the discovery of gunpowder, of silk, of the magnet, of sugar, of paper, or the like, may seem to depend on certain properties of things themselves and nature, there is at any rate nothing in the art of printing which is not plain and obvious. Nevertheless for want of observing that although it

is more difficult to arrange types of letters than to write letters by the motion of the hand, there is yet this difference between the two, that types once arranged serve for innumerable impressions, but letters written with the hand for a single copy only; or perhaps again for want of observing that ink can be so thickened as to color without running (particularly when the letters face upwards and the impression is made from above)—for want, I say, of observing these things, men went for so many ages without this most beautiful discovery, which is of so much service in the propagation of knowledge.

But such is the infelicity and unhappy disposition of the human mind in this course of invention, that it first distrusts and then despises itself: first will not believe that any such thing can be found out; and when it is found out, cannot understand how the world should have missed it so long. And this very thing may be justly taken as an argument of hope; namely, that there is a great mass of inventions still remaining, which not only by means of operations that are yet to be discovered, but also through the transferring, comparing, and applying of those already known, by the help of that learned experience of which I spoke, may be deduced and brought to light.

cxi

There is another ground of hope that must not be omitted. Let men but think over their infinite expenditure of understanding, time, and means on matters and pursuits of far less use and value; whereof if but a small part were directed to sound and solid studies, there is no difficulty that might not be overcome. This I thought good to add, because I plainly confess that a collection of history natural and experimental, such as I conceive it and as it ought to be, is a great, I may say a royal work, and of much labor and expense.

cxii

Meantime, let no man be alarmed at the multitude of particulars, but let this rather encourage him to hope. For the

particular phenomena of art and nature are but a handful to the inventions of the wit, when disjoined and separated from the evidence of things. Moreover this road has an issue in the open ground and not far off; the other has no issue at all, but endless entanglement. For men hitherto have made but short stay with experience, but passing her lightly by, have wasted an infinity of time on meditations and glosses of the wit. But if someone were by that could answer our questions and tell us in each case what the fact in nature is, the discovery of all causes and sciences would be but the work of a few years.

cxiii

Moreover I think that men may take some hope from my own example. And this I say not by way of boasting, but because it is useful to say it. If there be any that despond, let them look at me, that being of all men of my time the most busied in affairs of state, and a man of health not very strong (whereby much time is lost), and in this course altogether a pioneer, following in no man's track, nor sharing these counsels with any one, have nevertheless by resolutely entering on the true road, and submitting my mind to *things,* advanced these matters, as I suppose, some little way. And then let them consider what may be expected (after the way has been thus indicated) from men abounding in leisure, and from association of labors, and from successions of ages: the rather because it is not a way over which only one man can pass at a time (as is the case with that of reasoning), but one in which the labors and industries of men (especially as regards the collecting of experience) may with the best effect be first distributed and then combined. For then only will men begin to know their strength, when instead of great numbers doing all the same things, one shall take charge of one thing and another of another.

cxiv

Lastly, even if the breath of hope which blows on us from that new continent were fainter than it is and harder to

perceive; yet the trial (if we would not bear a spirit altogether abject) must by all means be made. For there is no comparison between that which we may lose by not trying and by not succeeding; since by not trying we throw away the chance of an immense good; by not succeeding we only incur the loss of a little human labor. But as it is, it appears to me from what has been said, and also from what has been left unsaid, that there is hope enough and to spare, not only to make a bold man try, but also to make a sober-minded and wise man believe.

CXV

Concerning the grounds then for putting away despair, which has been one of the most powerful causes of delay and hindrance to the progress of knowledge, I have now spoken. And this also concludes what I had to say touching the *signs* and *causes* of the errors, sluggishness, and ignorance which have prevailed; especially since the more subtle causes, which do not fall under popular judgment and observation, must be referred to what has been said on the idols of the human mind.

And here likewise should close that part of my *Instauration,* which is devoted to pulling down: which part is performed by three refutations; first, by the refutation of the *natural human reason,* left to itself; secondly, by the refutation of the *demonstrations;* and thirdly, by the refutation of the *theories,* or the received systems of philosophy and doctrine. And the refutation of these has been such, as alone it could be; that is to say, by signs and the evidence of causes; since no other kind of confutation was open to me, differing as I do from others both on first principles and on rules of demonstration. . . .

[In Aphorisms cxvi to cxxviii Bacon takes up certain misapprehensions and difficulties which may occur to the reader.

First, it must not be supposed that "after the fashion of ancient Greeks, and of certain moderns, as Telesius, Patricius, Severinus," that he wants "to found a new sect in philosophy." Bacon does

not wish to trouble himself "with any such speculative and withal unprofitable matters," he has "no entire or universal theory to propound"; on the contrary, his purpose is to try whether he "cannot in very fact lay more firmly the foundations, and extend more widely the limits, of the power and greatness of man." Nor does he "hold out offers or promises of particular works." His course is to devise a legitimate method of interpreting nature from which causes and axioms may be educed that may in their turn be used to effect works. In this task a mere beginning has been made. No doubt his history and tables of discovery contain some things that are uncertain or even false, "but this is of no consequence; for such things must needs happen at first." The essence of the method is that it is self-corrective. Again, men's interest may be averted and alienated because his history and experiments often treat of things which are trivial or commonly known, or are mean and low, or are too subtle and merely speculative, and seem to be of no use. But Bacon is "seeking for experiments of light, not for experiments of fruit." His object is to gain, from whatever source, a knowledge of "simple natures." It is false, therefore, to suppose that things like these are of no use. Just as the letters of the alphabet have no use or meaning in themselves, yet "are the subject-matter for the composition and apparatus of all discourse," so the knowledge of simple natures "gives entrance to all the secrets of nature's workshop, and virtually includes and draws after it whole bands and troops of works, and opens to us the sources of the noblest axioms; and yet in itself is of no great use." Nor should it be thought "a strange and harsh thing" that he has set aside all received authority. To have adduced authority for his conclusions would have been an easy thing, but "new discoveries must be sought out from the light of nature, not fetched back out of the darkness of antiquity." The new science relies not on the wisdom of the few, but on the cogency of its method. "For my way of discovering sciences goes far to level men's wits, and leaves but little to individual excellence; because it performs everything by the surest rules and demonstrations." Again, it must not be supposed that, because of the emphasis on works, truth is here rendered subservient to utility: "For I am building in the human understanding a true model of the world, such as it is in fact, not such as man's own reason would have it to be; a thing which cannot be done without a very diligent dissection and anatomy of the world . . . Truth, therefore, and utility

are here the very same things: and works themselves are of greater value as pledges of truth than as contributing to the comforts of life." The new method differs from those of the ancients in that it does not leap at once from a few scattered examples and particulars, by means of received notions, to the most general conclusions, but proceeds gradually, in order and with the greatest care, from particulars through all intermediate steps to the highest generalities. It must not be supposed, however, that this suspension of judgment entails "a denial of the capacity of the mind to comprehend truth"; instead, the intention is not to "slight the understanding, but improve it." Nor is the method intended to apply to the natural sciences alone; it is a general method: all of the other sciences, logic, ethics and politics, should be treated inductively. Finally, Bacon has no desire to "pull down and destroy the philosophy and arts and sciences which are at present in use"; but he gives "constant and distinct warning that by the methods now in use neither can any great progress be made in the doctrines and contemplative part of sciences, nor can they be carried out to any magnitude of works."]

CXXIX

It remains for me to say a few words touching the excellency of the end in view. Had they been uttered earlier, they might have seemed like idle wishes; but now that hopes have been raised and unfair prejudices removed, they may perhaps have greater weight. Also, if I had finished all myself, and had no occasion to call in others to help and take part in the work, I should even now have abstained from such language, lest it might be taken as a proclamation of my own deserts. But since I want to quicken the industry and rouse and kindle the zeal of others, it is fitting that I put men in mind of some things.

In the first place then, the introduction of famous discoveries appears to hold by far the first place among human actions; and this was the judgment of the former ages. For to the authors of inventions they awarded divine honors; while to those who did good service in the state (such as founders of cities and empires, legislators, saviors of their

country from long endured evils, quellers of tyrannies, and the like) they decreed no higher honors than heroic. And certainly if a man rightly compare the two, he will find that this judgment of antiquity was just. For the benefits of discoveries may extend to the whole race of man, civil benefits only to particular places; the latter last not beyond a few ages, the former through all time. Moreover the reformation of a state in civil matters is seldom brought in without violence and confusion; but discoveries carry blessings with them, and confer benefits without causing harm or sorrow to any.

Again, discoveries are as it were new creations, and imitations of God's works; as well sang the poet:—

> To man's frail race great Athens long ago
> First gave the seed whence waving harvests grow,
> And *re-created* all our life below.

And it appears worthy of remark in Solomon, that though mighty in empire and in gold; in the magnificence of his works, his court, his household, and his fleet; in the luster of his name and the worship of mankind: yet he took none of these to glory in, but pronounced that "The glory of God is to conceal a thing; the glory of the king to search it out."

Again, let a man only consider what a difference there is between the life of men in the most civilized province of Europe, and in the wildest and most barbarous districts of New India; he will feel it be great enough to justify the saying that "man is a god to man," not only in regard of aid and benefit, but also by a comparison of condition. And this difference comes not from soil, not from climate, not from race, but from the arts.

Again, it is well to observe the force and virtue and consequences of discoveries; and these are to be seen nowhere more conspicuously than in those three which were unknown to the ancients, and of which the origin, though recent, is obscure and inglorious; namely, printing, gunpowder, and the magnet. For these three have changed the whole face and state of things throughout the world; the first in literature, the second

in warfare, the third in navigation; whence have followed innumerable changes; insomuch that no empire, no sect, no star seems to have exerted greater power and influence in human affairs than these mechanical discoveries.

Further, it will not be amiss to distinguish the three kinds and as it were grades of ambition in mankind. The first is of those who desire to extend their own power in their native country; which kind is vulgar and degenerate. The second is of those who labor to extend the power of their country and its dominion among men. This certainly has more dignity, though not less covetousness. But if a man endeavor to establish and extend the power and dominion of the human race itself over the universe, his ambition (if ambition it can be called) is without doubt both a more wholesome thing and a more noble than the other two. Now the empire of man over things depends wholly on the arts and sciences. For we cannot command nature except by obeying her.

Again, if men have thought so much of some one particular discovery as to regard him as more than man who has been able by some benefit to make the whole human race his debtor, how much higher a thing to discover that by means of which all things else shall be discovered with ease! And yet (to speak the whole truth), as the uses of light are infinite, in enabling us to walk, to ply our arts, to read, to recognize one another; and nevertheless the very beholding of the light is itself a more excellent and a fairer thing than all the uses of it;—so assuredly the very contemplation of things, as they are, without superstition or imposture, error or confusion, is in itself more worthy than all the fruit of inventions.

Lastly, if the debasement of arts and sciences to purposes of wickedness, luxury, and the like, be made a ground of objection, let no one be moved thereby. For the same may be said of all earthly goods; of wit, courage, strength, beauty, wealth, light itself, and the rest. Only let the human race recover the right over nature which belongs to it by divine bequest, and let power be given it; the exercise thereof will be governed by sound reason and true religion.

CXXX

And now it is time for me to propound the art itself of interpreting nature; in which, although I conceive that I have given true and most useful precepts, yet I do not say either that it is absolutely necessary (as if nothing could be done without it) or that it is perfect. For I am of opinion that if men had ready at hand a just history of nature and experience, and labored diligently thereon; and if they could bind themselves to two rules,—the first, to lay aside received opinions and notions; and the second, to refrain the mind for a time from the highest generalizations, and those next to them, —they would be able by the native and genuine force of the mind, without any other art, to fall into my form of interpretation. For interpretation is the true and natural work of the mind when freed from impediments. It is true however that by my precepts everything will be in more readiness, and much more sure.

Nor again do I mean to say that no improvement can be made upon these. On the contrary, I that regard the mind not only in its own faculties but in its connection with things, must needs hold that the art of discovery may advance as discoveries advance.

THE SECOND BOOK OF

APHORISMS

CONCERNING

THE INTERPRETATION OF NATURE

AND

THE KINGDOM OF MAN

APHORISM

i

ON A given body to generate and superinduce a new nature or new natures, is the work and aim of *human power.* Of a given nature to discover the form, or true specific difference, or nature-engendering nature, or source of emanation (for these are the terms which come nearest to a description of the thing), is the work and aim of *human knowledge.* Subordinate to these primary works are two others that are secondary and of inferior mark: to the former, the transformation of concrete bodies, so far as this is possible; to the latter, the discovery, in every case of generation and motion, of the Latent Process carried on from the manifest efficient and the manifest material to the form which is engendered; and in like manner the discovery of the Latent Configuration of bodies at rest and not in motion.

ii

In what an ill condition human knowledge is at the present time, is apparent even from the commonly received maxims. It is a correct position that "true knowledge is knowledge by causes." And causes again are not improperly distributed into four kinds: the material, the formal, the efficient, and the final. But of these the final cause rather corrupts than advances the sciences, except such as have to do with human

action. The discovery of the formal is despaired of. The efficient and the material (as they are investigated and received, that is, as remote causes, without reference to the latent process leading to the form) are but slight and superficial, and contribute little, if anything, to true and active science. Nor have I forgotten that in a former passage I noted and corrected as an error of the human mind the opinion that Forms give existence. For though in nature nothing really exists beside individual bodies, performing pure individual acts according to a fixed law, yet in philosophy this very law, and the investigation, discovery, and explanation of it, is the foundation as well of knowledge as of operation. And it is this law, with its clauses, that I mean when I speak of *Forms;* a name which I the rather adopt because it has grown into use and become familiar.

iii

If a man be acquainted with the cause of any nature (as whiteness or heat) in certain subjects only, his knowledge is imperfect; and if he be able to superinduce an effect on certain substances only (of those susceptible of such effect), his power is in like manner imperfect. Now if a man's knowledge be confined to the efficient and material causes (which are unstable causes, and merely vehicles, or causes which convey the form in certain cases), he may arrive at new discoveries in reference to substances in some degree similar to one another, and selected beforehand; but he does not touch the deeper boundaries of things. But whosoever is acquainted with Forms, embraces the unity of nature in substances the most unlike; and is able therefore to detect and bring to light things never yet done, and such as neither the vicissitudes of nature, nor industry in experimenting, nor accident itself, would ever have brought into act, and which would never have occurred to the thought of man. From the discovery of Forms therefore results truth in speculation and freedom in operation.

iv

Although the roads to human power and to human knowledge lie close together, and are nearly the same, nevertheless on account of the pernicious and inveterate habit of dwelling on abstractions, it is safer to begin and raise the sciences from those foundations which have relation to practice, and to let the active part itself be as the seal which prints and determines the contemplative counterpart. We must therefore consider, if a man wanted to generate and superinduce any nature upon a given body, what kind of rule or direction or guidance he would most wish for, and express the same in the simplest and least abstruse language. For instance, if a man wishes to superinduce upon silver the yellow color of gold, or an increase of weight (observing the laws of matter), or transparency on an opaque stone, or tenacity on glass, or vegetatation on some substance that is not vegetable,—we must consider, I say, what kind of rule or guidance he would most desire. And in the first place, he will undoubtedly wish to be directed to something which will not deceive him in the result, nor fail him in the trial. Secondly, he will wish for such a rule as shall not tie him down to certain means and particular modes of operation. For perhaps he may not have those means, nor be able conveniently to procure them. And if there be other means and other methods for producing the required nature (beside the one prescribed) these may perhaps be within his reach; and yet he shall be excluded by the narrowness of the rule, and get no good from them. Thirdly, he will desire something to be shown him which is not as difficult as the thing proposed to be done, but comes nearer to practice.

For a true and perfect rule of operation then the direction will be *that it be certain, free, and disposing or leading to action.* And this is the same thing with the discovery of the true Form. For the Form of a nature is such that, given the Form, the nature infallibly follows. Therefore it is always present when the nature is present, and universally implies it, and is constantly inherent in it. Again, the Form is such that

if it be taken away, the nature infallibly vanishes. Therefore it is always absent when the nature is absent, and implies its absence, and inheres in nothing else. Lastly, the true Form is such that it deduces the given nature from some source of being which is inherent in more natures, and which is better known in the natural order of things than the Form itself. For a true and perfect axiom of knowledge then the direction and precept will be, *that another nature be discovered which is convertible with the given nature, and yet is a limitation of a more general nature, as of a true and real genus.* Now these two directions, the one active the other contemplative, are one and the same thing; and what in operation is most useful, that in knowledge is most true.

V

The rule or axiom for the transformation of bodies is of two kinds. The first regards a body as a troop or collection of simple natures. In gold, for example, the following properties meet. It is yellow in color; heavy up to a certain weight; malleable or ductile to a certain degree of extension; it is not volatile, and loses none of its substance by the action of fire; it turns into a liquid with a certain degree of fluidity; it is separated and dissolved by particular means; and so on for the other natures which meet in gold. This kind of axiom, therefore, deduces the thing from the forms of simple natures. For he who knows the forms of yellow, weight, ductility, fixity, fluidity, solution, and so on, and the methods for superinducing them, and their gradations and modes, will make it his care to have them joined together in some body, whence may follow the transformation of that body into gold. And this kind of operation pertains to the first kind of action. For the principle of generating some one simple nature is the same as that of generating many; only that a man is more fettered and tied down in operation if more are required, by reason of the difficulty of combining into one so many natures, which do not readily meet except in the beaten and ordinary

paths of nature. It must be said however that this mode of operation (which looks to simple natures though in a compound body) proceeds from what in nature is constant and eternal and universal, and opens broad roads to human power, such as (in the present state of things) human thought can scarcely comprehend or anticipate.

The second kind of axiom, which is concerned with the discovery of the Latent Process, proceeds not by simple natures, but by compound bodies, as they are found in nature in its ordinary course. As, for instance, when inquiry is made, from what beginnings, and by what method and by what process, gold or any other metal or stone is generated, from its first menstrua and rudiments up to the perfect mineral; or in like manner by what process herbs are generated, from the first concretion of juices in the ground or from seeds up to the formed plant, with all the successive motions and diverse and continued efforts of nature. So also in the inquiry concerning the process of development in the generation of animals, from coition to birth; and in like manner of other bodies.

It is not however only to the generations of bodies that this investigation extends, but also to other motions and operations of nature. As, for instance, when inquiry is made concerning the whole course and continued action of nutrition, from the first reception of the food to its complete assimilation; or again, concerning the voluntary motion of animals, from the first impression on the imagination and the continued efforts of the spirit up to the bendings and movements of the limbs; or concerning the motion of the tongue and lips and other instruments, and the changes through which it passes till it comes to the utterance of articulate sounds. For these inquiries also relate to natures concrete or combined into one structure, and have regard to what may be called particular and special habits of nature, not to her fundamental and universal laws which constitute Forms. And yet it must be confessed that this plan appears to be readier and to lie nearer at hand and to give more ground for hope than the primary one.

In like manner the operative which answers to this speculative part, starting from the ordinary incidents of nature, extends its operation to things immediately adjoining, or at least not far removed. But as for any profound and radical operations on nature, they depend entirely on the primary axioms. And in those things too where man has no means of operating, but only of knowing, as in the heavenly bodies (for these he cannot operate upon or change or transform), the investigation of the fact itself or truth of the thing, no less than the knowledge of the causes and consents, must come from those primary and catholic axioms concerning simple natures; such as the nature of spontaneous rotation, of attraction or magnetism, and of many others which are of a more general form than the heavenly bodies themselves. For let no one hope to decide the question whether it is the earth or heaven that really revolves in the diurnal motion, until he has first comprehended the nature of spontaneous rotation.

vi

But this Latent Process, of which I speak, is quite another thing than men, preoccupied as their minds now are, will easily conceive. For what I understand by it is not certain measures or signs or successive steps of process in bodies, which can be seen; but a process perfectly continuous, which for the most part escapes the sense.

For instance: in all generation and transformation of bodies, we must inquire what is lost and escapes; what remains, what is added; what is expanded, what contracted; what is united, what separated; what is continued, what cut off; what propels, what hinders; what predominates, what yields; and a variety of other particulars.

Again, not only in the generation or transformation of bodies are these points to be ascertained, but also in all other alterations and motions it should in like manner be inquired what goes before, what comes after; what is quicker, what more tardy; what produces, what governs motion; and like

points; all which nevertheless in the present state of the sciences (the texture of which is as rude as possible and good for nothing) are unknown and unhandled. For seeing that every natural action depends on things infinitely small, or at least too small to strike the sense, no one can hope to govern or change nature until he has duly comprehended and observed them.

vii

In like manner the investigation and discovery of the Latent Configuration in bodies is a new thing, no less than the discovery of the Latent Process and of the Form. For as yet we are but lingering in the outer courts of nature, nor are we preparing ourselves a way into her inner chambers. Yet no one can endow a given body with a new nature, or successfully and aptly transmute it into a new body, unless he has attained a competent knowledge of the body so to be altered or transformed. Otherwise he will run into methods which, if not useless, are at any rate difficult and perverse and unsuitable to the nature of the body on which he is operating. It is clear therefore that to this also a way must be opened and laid out.

And it is true that upon the anatomy of organised bodies (as of man and animals) some pains have been well bestowed and with good effect; and a subtle thing it seems to be, and a good scrutiny of nature. Yet this kind of anatomy is subject to sight and sense, and has place only in organised bodies. And besides it is a thing obvious and easy, when compared with the true anatomy of the Latent Configuration in bodies which are thought to be of uniform structure: especially in things that have a specific character and their parts, as iron, stone; and again in parts of uniform structure in plants and animals, as the root, the leaf, the flower, flesh, blood, and bones. But even in this kind, human industry has not been altogether wanting; for this is the very thing aimed at in the separation of bodies of uniform structure by means of distillations and

other modes of analysis,—that the complex structure of the compound may be made apparent by bringing together its several homogeneous parts. And this is of use too, and conduces to the object we are seeking; although too often fallacious in its results, because many natures which are in fact newly brought out and superinduced by fire and heat and other modes of solution are taken to be the effect of separation merely, and to have subsisted in the compound before. And after all, this is but a small part of the work of discovering the true configuration in the compound body; which configuration is a thing far more subtle and exact, and such as the operation of fire rather confounds than brings out and makes distinct.

Therefore a separation and solution of bodies must be effected, not by fire indeed, but by reasoning and true induction, with experiments to aid; and by a comparison with other bodies, and a reduction to simple natures and their Forms, which meet and mix in the compound. In a word we must pass from Vulcan to Minerva, if we intend to bring to light the true textures and configurations of bodies; on which all the occult and, as they are called, specific properties and virtues in things depend; and from which too the rule of every powerful alteration and transformation is derived.

For example, we must inquire what amount of spirit there is in every body, what of tangible essence; and of the spirit, whether it be copious and turgid, or meagre and scarce; whether it be fine or coarse, akin to air or to fire, brisk or sluggish, weak or strong, progressive or retrograde, interrupted or continuous, agreeing with external and surrounding objects or disagreeing, etc. In like manner we must inquire into the tangible essence (which admits of no fewer differences than the spirit),—into its coats, its fibres, its kinds of texture. Moreover the disposition of the spirit throughout the corporeal frame, with its pores, passages, veins and cells, and the rudiments or first essays of the organised body, fall under the same investigation. But on these inquiries also, and I may say on all the discovery of the Latent Configuration,

a true and clear light is shed by the primary axioms, which entirely dispels all darkness and subtlety.

viii

Nor shall we thus be led to the doctrine of atoms, which implies the hypothesis of a vacuum and that of the unchangeableness of matter (both false assumptions); we shall be led only to real particles, such as really exist. Nor again is there any reason to be alarmed at the subtlety of the investigation, as if it could not be disentangled: on the contrary, the nearer it approaches to simple natures, the easier and plainer will everything become; the business being transferred from the complicated to the simple, from the incommensurable to the commensurable, from surds to rational quantities, from the infinite and vague to the finite and certain,—as in the case of the letters of the alphabet and the notes of music. And inquiries into nature have the best result when they begin with physics and end in mathematics. Again, let no one be afraid of high numbers or minute fractions. For in dealing with numbers it is as easy to set down or conceive a thousand as one, or the thousandth part of an integer as an integer itself.

ix

From the two kinds of axioms which have been spoken of, arises a just division of philosophy and the sciences; taking the received terms (which come nearest to express the thing) in a sense agreeable to my own views. Thus, let the investigation of Forms, which are (in the eye of reason at least, and in their essential law) eternal and immutable, constitute *metaphysics;* and let the investigation of the Efficient Cause, and of Matter, and of the Latent Process, and the Latent Configuration (all of which have reference to the common and ordinary course of nature, not to her eternal and fundamental laws) constitute *physics.* And to these let there be subordinate two practical divisions: to physics, *mechanics;* to meta-

physics, what (in a purer sense of the word) I call *magic,* on account of the broadness of the ways it moves in, and its greater command over nature.

x

Having thus set up the mark of knowledge, we must go on to precepts, and that in the most direct and obvious order. Now my directions for the interpretation of nature embrace two generic divisions: the one how to educe and form axioms from experience; the other how to deduce and derive new experiments from axioms. The former again is divided into three ministrations: a ministration to the sense, a ministration to the memory, and a ministration to the mind or reason.

For first of all we must prepare a *Natural and Experimental History,* sufficient and good; and this is the foundation of all; for we are not to imagine or suppose, but to discover, what nature does or may be made to do.

But natural and experimental history is so various and diffuse, that it confounds and distracts the understanding, unless it be ranged and presented to view in a suitable order. We must therefore form *Tables and Arrangements of Instances,* in such a method and order that the understanding may be able to deal with them.

And even when this is done, still the understanding, if left to itself and its own spontaneous movements, is incompetent and unfit to form axioms, unless it be directed and guarded. Therefore in the third place we must use *Induction,* true and legitimate induction, which is the very key of interpretation. But of this, which is the last, I must speak first, and then go back to the other ministrations.

xi

The investigation of Forms proceeds thus: a nature being given, we must first of all have a muster or presentation before the understanding of all known instances which agree in

the same nature, though in substances the most unlike. And such collection must be made in the manner of a history, without premature speculation, or any great amount of subtlety. For example, let the investigation be into the Form of heat.

Instances Agreeing in the Nature of Heat

1. The rays of the sun, especially in summer and at noon.
2. The rays of the sun reflected and condensed, as between mountains, or on walls, and most of all in burning-glasses and mirrors.
3. Fiery meteors.
4. Burning thunderbolts.
5. Eruptions of flame from the cavities of mountains.
6. All flame. . . .

[Bacon lists, in all, twenty-seven sets of instances in this *Table of Essence and Presence.*]

xii

Secondly, we must make a presentation to the understanding of instances in which the given nature is wanting; because the Form, as stated above, ought no less to be absent when the given nature is absent, than present when it is present. But to note all these would be endless.

The negatives should therefore be subjoined to the affirmatives, and the absence of the given nature inquired of in those subjects only that are most akin to the others in which it is present and forthcoming. This I call the *Table of Deviation, or of Absence in Proximity.*

Instances in Proximity where the Nature of Heat is Absent

1. The rays of the moon and of stars and comets are not found to be hot to the touch; indeed the severest colds are observed to be at the full moons.

The larger fixed stars however, when passed or approached by the sun, are supposed to increase and give intensity to the

heat of the sun; as is the case when the sun is in the sign Leo, and in the Dog-days.

2. The rays of the sun in what is called the middle region of the air do not give heat; for which there is commonly assigned not a bad reason, viz. that that region is neither near enough to the body of the sun from which the rays emanate, nor to the earth from which they are reflected. And this appears from the fact that on the tops of mountains, unless they are very high, there is perpetual snow. On the other hand it has been observed that on the peak of Teneriffe, and among the Andes of Peru, the very tops of the mountains are free from snow; which lies only somewhat lower down. Moreover the air itself at the very top is found to be by no means cold, but only rare and keen; insomuch that on the Andes it pricks and hurts the eyes by its excessive keenness, and also irritates the mouth of the stomach, producing vomiting. And it was observed by the ancients that on the top of Olympus the rarity of the air was such that those who ascended it had to carry sponges with them dipped in vinegar and water, and to apply them from time to time to their mouth and nose, the air being from its rarity not sufficient to support respiration; and it was further stated that on this summit the air was so serene, and so free from rain and snow and wind, that letters traced by the finger in the ashes of the sacrifices on the altar of Jupiter remained there till the next year without being at all disturbed. And at this day travellers ascending to the top of the Peak of Teneriffe make the ascent by night and not by day; and soon after the rising of the sun are warned and urged by their guides to come down without delay, on account of the danger they run lest the animal spirits should swoon and be suffocated by the tenuity of the air. . . .

[Bacon cites thirty-two cases of such *Instances in Proximity*.]

xiii

Thirdly, we must make a presentation to the understanding of instances in which the nature under inquiry is found

in different degrees, more or less; which must be done by making a comparison either of its increase and decrease in the same subject, or of its amount in different subjects, as compared one with another. For since the Form of a thing is the very thing itself, and the thing differs from the Form no otherwise than as the apparent differs from the real, or the external from the internal, or the thing in reference to man from the thing in reference to the universe; it necessarily follows that no nature can be taken as the true Form, unless it always decrease when the nature in question decreases, and in like manner always increase when the nature in question increases. This table therefore I call the *Table of Degrees* or the *Table of Comparison.*

Table of Degrees or Comparison in Heat

I will therefore first speak of those substances which contain no degree at all of heat perceptible to the touch, but seem to have a certain potential heat only, or disposition and preparation for hotness. After that I shall proceed to substances which are hot actually, and to the touch, and to their intensities and degrees.

1. In solid and tangible bodies we find nothing which is in its nature originally hot. For no stone, metal, sulphur, fossil, wood, water, or carcass of animal is found to be hot. And the hot water in baths seems to be heated by external causes; whether it be by flame or subterraneous fire, such as is thrown up from Ætna and many other mountains, or by the conflict of bodies, as heat is caused in the dissolutions of iron and tin. There is therefore no degree of heat palpable to the touch in animate substances; but they differ in degree of cold, wood not being equally cold with metal. But this belongs to the Table of Degrees in Cold.

2. As far however as potential heat and aptitude for flame is concerned, there are many inanimate substances found strongly disposed thereto, as sulphur, naphtha, rock oil. . . .

[He gives forty-one cases in the *Table of Degrees.*]

xiv

How poor we are in history any one may see from the foregoing tables; where I not only insert sometimes mere traditions and reports (though never without a note of doubtful credit and authority) in place of history proved and instances certain, but am also frequently forced to use the words "Let trial be made," or "Let it be further inquired."

xv

The work and office of these three tables I call the Presentation of Instances to the Understanding. Which presentation having been made, Induction itself must be set at work; for the problem is, upon a review of the instances, all and each, to find such a nature as is always present or absent with the given nature, and always increases and decreases with it; and which is, as I have said, a particular case of a more general nature. Now if the mind attempt this affirmatively from the first, as when left to itself it is always wont to do, the result will be fancies and guesses and notions ill defined and axioms that must be mended every day; unless like the schoolmen we have a mind to fight for what is false; though doubtless these will be better or worse according to the faculties and strength of the understanding which is at work. To God, truly, the Giver and Architect of Forms, and it may be to the angels and higher intelligences, it belongs to have an affirmative knowledge of Forms immediately, and from the first contemplation. But this assuredly is more than man can do, to whom it is granted only to proceed at first by negatives, and at last to end in affirmatives, after exclusion has been exhausted.

xvi

We must make therefore a complete solution and separation of nature, not indeed by fire, but by the mind, which is a kind of divine fire. The first work therefore of true induction (as far as regards the discovery of Forms) is the rejection or ex-

clusion of the several natures which are not found in some instance where the given nature is present, or are found in some instance where the given nature is absent, or are found to increase in some instance when the given nature decreases, or to decrease when the given nature increases. Then indeed after the rejection and exclusion has been duly made, there will remain at the bottom, all light opinions vanishing into smoke, a Form affirmative, solid and true and well defined. This is quickly said; but the way to come at it is winding and intricate. I will endeavor however not to overlook any of the points which may help us towards it.

xvii

But when I assign so prominent a part to Forms, I cannot too often warn and admonish men against applying what I say to those forms to which their thoughts and contemplations have hitherto been accustomed.

For in the first place I do not at present speak of Compound Forms, which are, as I have remarked, combinations of simple natures according to the common course of the universe; as of the lion, eagle, rose, gold, and the like. It will be time to treat of these when we come to the Latent Processes and Latent Configurations, and the discovery of them, as they are found in what are called substances or natures concrete.

And even in the case of simple natures I would not be understood to speak of abstract Forms and Ideas, either not defined in matter at all, or ill defined. For when I speak of Forms, I mean nothing more than those laws and determinations of absolute actuality, which govern and constitute any simple nature, as heat, light, weight, in every kind of matter and subject that is susceptible of them. Thus the Form of heat or the Form of light is the same thing as the Law of heat or the Law of light. Nor indeed do I ever allow myself to be drawn away from things themselves and the operative part. And therefore when I say (for instance) in the investigation of the Form of heat, "Reject rarity," or "Rarity does not belong

to the form of heat;" it is the same as if I said, "It is possible to superinduce heat on a dense body," or "It is possible to take away or keep out heat from a rare body."

But if anyone conceive that my Forms too are of a somewhat abstract nature, because they mix and combine things heterogeneous (for the heat of heavenly bodies and the heat of fire seem to be very heterogeneous; so do the fixed red of the rose or the like, and the apparent red in the rainbow, the opal, or the diamond; so again do the different kinds of death, death by drowning, by hanging, by stabbing, by apoplexy, by atrophy; and yet they agree severally in the nature of heat, redness, death); if anyone, I say, be of this opinion, he may be assured that his mind is held in captivity by custom, by the gross appearance of things, and by men's opinions. For it is most certain that these things, however heterogeneous and alien from each other, agree in the Form or Law which governs heat, redness and death; and that the power of man cannot possibly be emancipated and freed from the common course of nature, and expanded and exalted to new efficients and new modes of operation, except by the revelation and discovery of Forms of this kind. And yet, when I have spoken of this union of nature, which is the point of most importance, I shall proceed to the divisions and veins of nature, as well the ordinary as those that are more inward and exact, and speak of them in their place.

xviii

I must now give an example of the Exclusion or Rejection of natures which by the Tables of Presentation are found not to belong to the Form of heat; observing in the meantime that not only each table suffices for the rejection of any nature, but even any one of the particular instances contained in any of the tables. For it is manifest from what has been said that any one contradictory instance overthrows a conjecture as to the Form. But nevertheless for clearness' sake and that the use of the tables may be more plainly shown, I sometimes double or multiply an exclusion.

An Example of Exclusion, or Rejection of Natures from the Form of Heat

1. On account of the rays of the sun, reject the nature of the elements.

2. On account of common fire, and chiefly subterraneous fires (which are the most remote and most completely separate from the rays of heavenly bodies), reject the nature of heavenly bodies.

3. On account of the warmth acquired by all kinds of bodies (minerals, vegetables, skin of animals, water, oil, air, and the rest) by mere approach to a fire, or other hot body, reject the distinctive or more subtle texture of bodies. . . .

[In all, fourteen rejections of natures are given.]

There are other natures beside these; for these tables are not perfect, but meant only for examples.

All and each of the above mentioned natures do *not* belong to the Form of heat. And from all of them man is freed in his operations on heat.

xix

In the process of Exclusion are laid the foundations of true Induction, which however is not completed till it arrives at an Affirmative. Nor is the Exclusive part itself at all complete, nor indeed can it possibly be so at first. For Exclusion is evidently the rejection of simple natures; and if we do not yet possess sound and true notions of simple natures, how can the process of Exclusion be made accurate? Now some of the above-mentioned notions (as that of the nature of the elements, of the nature of heavenly bodies, of rarity) are vague and ill-defined. I therefore, well knowing and nowise forgetting how great a work I am about (viz. that of rendering the human understanding a match for things and nature), do not rest satisfied with the precepts I have laid down; but proceed further to devise and supply more powerful aids for the use of

the understanding; which I shall now subjoin. And assuredly in the Interpretation of Nature the mind should by all means be so prepared and disposed, that while it rests and finds footing in due stages and degrees of certainty, it may remember withal (especially at the beginning) that what it has before it depends in great measure upon what remains behind.

XX

And yet since truth will sooner come out from error than from confusion, I think it expedient that the understanding should have permission, after the three Tables of First Presentation (such as I have exhibited) have been made and weighed, to make an essay of the Interpretation of Nature in the affirmative way; on the strength both of the instances given in the tables, and of any others it may meet with elsewhere. Which kind of essay I call the *indulgence of the understanding,* or the *commencement of interpretation,* or the *First Vintage.*

First Vintage concerning the Form of Heat

It is to be observed that the Form of a thing is to be found (as plainly appears from what has been said) in each and all the instances, in which the thing itself is to be found; otherwise it would not be the Form. It follows therefore that there can be no contradictory instance. At the same time the Form is found much more conspicuous and evident in some instances than in others; namely in those wherein the nature of the Form is less restrained and obstructed and kept within bounds by other natures. Instances of this kind I call *Shining or Striking Instances.* Let us now therefore proceed to the First Vintage concerning the Form of Heat. . . .

[From an analytical comparison of the Tables Bacon now draws the working hypothesis as to the nature of heat which follows.]

Let this then be the First Vintage, or commencement of interpretation, concerning the Form of heat, made by way of indulgence to the understanding.

Now from this our First Vintage it follows that the Form or true definition of heat (heat, that is, in relation to the universe, not simply in relation to man) is in few words as follows: *Heat is a motion, expansive, restrained, and acting in its strife upon the smaller particles of bodies.* But the expansion is thus modified: *while it expands all ways, it has at the same time an inclination upwards.* And the struggle in the particles is modified also: *it is not sluggish, but hurried and with violence.*

Viewed with reference to operation it is the same thing. For the direction is this: *If in any natural body you can excite a dilating or expanding motion, and can so repress this motion and turn it back upon itself, that the dilation shall not proceed equably, but have its way in one part and be counteracted in another, you will undoubtedly generate heat;*—without taking into account whether the body be elementary (as it is called) or subject to celestial influence; whether it be luminous or opaque; rare or dense; locally expanded or confined within the bounds of its first dimension; verging to dissolution or remaining in its original state; animal, vegetable, or mineral, water, oil or air, or any other substance whatever susceptible of the above-mentioned motion. Sensible heat is the same thing; only it must be considered with reference to the sense. Let us now proceed to further aids.

xxi

The Tables of First Presentation and the Rejection or process of Exclusion being completed, and also the First Vintage being made thereupon, we are to proceed to the other helps of the understanding in the Interpretation of Nature and true and perfect Induction. In propounding which, I mean, when Tables are necessary, to proceed upon the Instances of Heat and Cold; but when a small number of examples will suffice, I shall proceed at large; so that the inquiry may be kept clear, and yet more room be left for the exposition of the system.

I propose to treat then in the first place of *Prerogative Instances;* secondly, of the *Supports of Induction;* thirdly, of the

Rectification of Induction; fourthly, of *Varying the Investigation according to the nature of the Subject;* fifthly, of *Prerogative Natures* with respect to Investigation, or of what should be inquired first and what last; sixthly, of the *Limits of Investigation,* or a Synopsis of all Natures in the Universe; seventhly, of the *Application to Practice,* or of things in their relation to Man; eighthly, of *Preparations for Investigation;* and lastly, of the *Ascending and Descending Scale of Axioms.* . . .

[Only the first part of this program was ever carried out. In Aphorisms xxii to lii Bacon lists and discusses some twenty-seven kinds of Prerogative Instances.]

THOMAS HOBBES

Leviathan

LEVIATHAN

OR

THE MATTER, FORM, AND POWER

OF A

COMMONWEALTH

ECCLESIASTICAL AND CIVIL

THE INTRODUCTION

NATURE, the art whereby God hath made and governs the world, is by the *art* of man, as in many other things, so in this also imitated, that it can make an artificial animal. For seeing life is but a motion of limbs, the beginning whereof is in some principal part within; why may we not say, that all *automata* (engines that move themselves by springs and wheels as doth a watch) have an artificial life? For what is the heart, but a spring; and the nerves, but so many strings, and the joints, but so many wheels, giving motion to the whole body, such as was intended by the artificer? Art goes yet further, imitating that rational and most excellent work of nature, *man*. For by art is created that great *Leviathan* called a *Commonwealth,* or *State,* in Latin *Civitas,* which is but an artificial man; though of greater stature and strength than the natural, for whose protection and defense it was intended; and in which the sovereignty is an artificial soul, as giving life and motion to the whole body; the magistrates, and other officers of judicature and execution, artificial joints; reward and punishment, by which fastened to the seat of the sovereignty every joint and member is moved to perform his duty, are the nerves, that do the same in the body natural; the wealth and

riches of all the particular members, are the strength *salus populi,* the people's safety, its business; counsellors, by whom all things needful for it to know are suggested unto it, are the memory; equity and laws, an artificial reason and will; concord, health; sedition, sickness; and civil war, death. Lastly, the pacts and covenants, by which the parts of this body politic were at first made, set together, and united, resemble that *fiat,* or the *let us make man,* pronounced by God in the creation.

To describe the nature of this artificial man, I will consider:

First, the *matter* thereof, and the *artificer;* both which is *man.*

Secondly, *how,* and by what *covenants* it is made; what are the *rights* and just *power* or *authority* of a *sovereign;* and what it is that preserveth or dissolveth it.

Thirdly, what is a *Christian commonwealth.*

Lastly, what is the *kingdom of darkness.*

Concerning the first, there is a saying much usurped of late, that wisdom is acquired, not by reading of books, but of men. Consequently whereunto, those persons that for the most part can give no other proof of being wise, take great delight to show what they think they have read in men, by uncharitable censures of one another behind their backs. But there is another saying not of late understood, by which they might learn truly to read one another if they would take the pains: that is, *nosce teipsum,* Read thyself; which was not meant, as it is now used, to countenance either the barbarous state of men in power towards their inferiors, or to encourage men of low degree to a saucy behavior towards their betters; but to teach us that from the similitude of the thoughts and passions of one man to the thoughts and passions of another, whosoever looketh into himself, and considereth what he doth when he does think, opine, reason, hope, fear, etc. and upon what grounds; he shall thereby read and know what are the thoughts and passions of all other men upon the like occasions. I say the similitude of *passions,* which are the same in all men, desire, fear, hope, etc.; not the similitude of the *objects* of the

passions, which are the things desired, feared, hoped, etc.: for these the constitution individual, and particular education, do so vary, and they are so easy to be kept from our knowledge, that the characters of man's heart, blotted and confounded as they are with dissembling, lying, counterfeiting, and erroneous doctrines, are legible only to him that searcheth hearts. And though by men's actions we do discover their design sometimes; yet to do it without comparing them with our own, and distinguishing all circumstances by which the case may come to be altered, is to decypher without a key, and be for the most part deceived, by too much trust or by too much diffidence, as he that reads is himself a good or evil man.

But let one man read another by his actions never so perfectly, it serves him only with his acquaintance, which are but few. He that is to govern a whole nation, must read in himself not this or that particular man, but mankind; which though it be hard to do, harder than to learn any language or science, yet when I shall have set down my own reading orderly and perspicuously, the pains left another will be only to consider if he also find not the same in himself. For this kind of doctrine admitteth no other demonstration.

PART I: OF MAN

CHAPTER I

OF SENSE

CONCERNING the thoughts of man, I will consider them first singly, and afterwards in train, or dependence upon one another. Singly, they are every one a *representation* or *appearance,* of some quality or other accident of a body without us, which is commonly called an *object.* Which object worketh on the eyes, ears, and other parts of a man's body, and by diversity of working produceth diversity of appearances.

The original of them all is that which we call *sense,* for there is no conception in a man's mind which hath not at first, totally or by parts, been begotten upon the organs of sense. The rest are derived from that original.

To know the natural cause of sense is not very necessary to the business now in hand; and I have elsewhere written of the same at large. Nevertheless, to fill each part of my present method, I will briefly deliver the same in this place.

The cause of sense is the external body, or object, which presseth the organ proper to each sense, either immediately, as in the taste and touch; or mediately, as in seeing, hearing, and smelling; which pressure, by the mediation of the nerves, and other strings and membranes of the body, continued inwards to the brain and heart, causeth there a resistance, or counter-pressure, or endeavor of the heart to deliver itself, which endeavor, because outward, seemeth to be some matter without. And this seeming, or fancy, is that which men call *sense;* and consisteth, as to the eye, in a light, or color figured; to the ear, in a sound; to the nostril, in an odor; to the tongue and palate, in a savor; and to the rest of the body, in heat, cold, hardness, softness, and such other qualities as we discern by feeling. All which qualities, called *sensible,* are, in the object that causeth them, but so many several motions of the matter, by which it presseth our organs diversely. Neither in us that are pressed, are they anything else but divers motions; for motion produceth nothing but motion. But their appearance to us is fancy, the same waking that dreaming. And as pressing, rubbing, or striking the eye makes us fancy a light, and pressing the ear produceth a din, so do the bodies also we see or hear, produce the same by their strong though unobserved action. For if those colors and sounds were in the bodies, or objects that cause them, they could not be severed from them, as by glasses, and in echoes by reflection, we see they are; where we know the thing we see is in one place, the appearance in another. And though at some certain distance the real and very object seem invested with the fancy it begets in us, yet still the object is one thing, the image or fancy is

another. So that sense, in all cases, is nothing else but original fancy, caused, as I have said, by the pressure, that is, by the motion, of external things upon our eyes, ears, and other organs thereunto ordained.

But the philosophy schools, through all the universities of Christendom, grounded upon certain texts of Aristotle, teach another doctrine, and say, for the cause of vision, that the thing seen, sendeth forth on every side a *visible species,* in English, a visible show, apparition, or aspect, or a being seen; the receiving whereof into the eye is seeing. And for the cause of hearing, that the thing heard sendeth forth an *audible species,* that is an audible aspect, or audible being seen; which entering at the ear maketh hearing. Nay, for the cause of understanding also, they say the thing understood sendeth forth an *intelligible species,* that is, an intelligible being seen; which, coming into the understanding, makes us understand. I say not this as disproving the use of universities; but because I am to speak hereafter of their office in a commonwealth, I must let you see on all occasions by the way, what things would be amended in them; amongst which the frequency of insignificant speech is one.

CHAPTER II

OF IMAGINATION

THAT when a thing lies still, unless somewhat else stir it, it will lie still for ever, is a truth that no man doubts of. But that when a thing is in motion, it will eternally be in motion, unless somewhat else stay it, though the reason be the same, namely, that nothing can change itself, is not so easily assented to. For men measure, not only other men, but all other things, by themselves; and because they find themselves subject, after motion, to pain and lassitude, think everything else grows weary of motion, and seeks repose of its own accord; little considering whether it be not some other motion,

wherein that desire of rest they find in themselves consisteth. From hence it is that the schools say, heavy bodies fall downwards out of an appetite to rest, and to conserve their nature in that place which is most proper for them; ascribing appetite, and knowledge of what is good for their conservation, which is more than man has, to things inanimate, absurdly.

When a body is once in motion, it moveth, unless something else hinder it, eternally; and whatsoever hindereth it cannot in an instant, but in time and by degrees, quite extinguish it; and as we see in the water, though the wind cease, the waves give not over rolling for a long time after: so also it happeneth in that motion which is made in the internal parts of a man, then, when he sees, dreams, etc. For after the object is removed, or the eye shut, we still retain an image of the thing seen, though more obscure than when we see it. And this is it, the Latins call *imagination,* from the image made in seeing; and apply the same, though improperly, to all the other senses. But the Greeks call it *fancy;* which signifies appearance, and is as proper to one sense, as to another. Imagination therefore is nothing but *decaying sense;* and is found in men, and many other living creatures, as well sleeping as waking.

The decay of sense in men waking, is not the decay of the motion made in sense; but an obscuring of it, in such manner as the light of the sun obscureth the light of the stars; which stars do no less exercise their virtue, by which they are visible, in the day than in the night. But because amongst many strokes which our eyes, ears, and other organs receive from external bodies, the predominant only is sensible; therefore, the light of the sun being predominant, we are not affected with the action of the stars. And any object being removed from our eyes, though the impression it made in us remain, yet other objects more present succeeding and working on us, the imagination of the past is obscured and made weak, as the voice of a man is in the noise of the day. From whence it followeth that the longer the time is, after the sight or sense of any object, the weaker is the imagination. For the con-

tinual change of man's body destroys in time the parts which in sense were moved; so that distance of time, and of place, hath one and the same effect in us. For as at a great distance of place, that which we look at appears dim, and without distinction of the smaller parts; and as voices grow weak, and inarticulate; so also, after great distance of time, our imagination of the past is weak; and we lose, for example, of cities we have seen, many particular streets, and of actions, many particular circumstances. This decaying sense, when we would express the thing itself, I mean fancy itself, we call *imagination,* as I said before; but when we would express the decay, and signify that the sense is fading, old, and past, it is called *memory.* So that imagination and memory are but one thing, which for divers considerations hath divers names.

Much memory, or memory of many things, is called *experience.* Again, imagination being only of those things which have been formerly perceived by sense, either all at once or by parts at several times; the former, which is the imagining the whole object as it was presented to the sense, is *simple* imagination, as when one imagineth a man, or horse, which he hath seen before. The other is *compounded;* as when, from the sight of a man at one time and of a horse at another, we conceive in our mind a Centaur. So when a man compoundeth the image of his own person with the image of the actions of another man, as when a man imagines himself a Hercules or an Alexander, which happeneth often to them that are much taken with reading of romances, it is a compound imagination, and properly but a fiction of the mind. There be also other imaginations that rise in men, though waking, from the great impression made in sense: as from gazing upon the sun, the impression leaves an image of the sun before our eyes a long time after; and from being long and vehemently attent upon geometrical figures, a man shall in the dark, though awake, have the images of lines and angles before his eyes; which kind of fancy hath no particular name, as being a thing that doth not commonly fall into men's discourse.

The imaginations of them that sleep are those we call *dreams*. And these also, as all other imaginations, have been before, either totally or by parcels, in the sense. And because in sense, the brain and nerves, which are the necessary organs of sense, are so benumbed in sleep, as not easily to be moved by the action of external objects, there can happen in sleep no imagination, and therefore no dream, but what proceeds from the agitation of the inward parts of man's body; which inward parts, for the connection they have with the brain and other organs when they be distempered, do keep the same in motion; whereby the imaginations there formerly made, appear as if a man were waking; saving that the organs of sense being now benumbed, so as there is no new object which can master and obscure them with a more vigorous impression, a dream must needs be more clear, in this silence of sense, than our waking thoughts. And hence it cometh to pass that it is a hard matter, and by many thought impossible, to distinguish exactly between sense and dreaming. For my part, when I consider that in dreams I do not often nor constantly think of the same persons, places, objects, and actions, that I do waking; nor remember so long a train of coherent thoughts, dreaming, as at other times; and because waking I often observe the absurdity of dreams, but never dream of the absurdities of my waking thoughts; I am well satisfied that, being awake, I know I dream not, though when I dream I think myself awake.

And seeing dreams are caused by the distemper of some of the inward parts of the body, divers distempers must needs cause different dreams. And hence it is that lying cold breedeth dreams of fear, and raiseth the thought and image of some fearful object, the motion from the brain to the inner parts and from the inner parts to the brain being reciprocal; and that as anger causeth heat in some parts of the body when we are awake, so when we sleep the overheating of the same parts causeth anger, and raiseth up in the brain the imagination of an enemy. In the same manner, as natural kindness, when we are awake, causeth desire, and desire maketh heat in

certain other parts of the body; so also too much heat in those parts, while we sleep, raiseth in the brain the imagination of some kindness shown. In sum, our dreams are the reverse of our waking imaginations; the motion when we are awake beginning at one end, and when we dream at another.

The most difficult discerning of a man's dream from his waking thoughts is, then, when by some accident we observe not that we have slept: which is easy to happen to a man full of fearful thoughts, and whose conscience is much troubled; and that sleepeth, without the circumstances of going to bed or putting off his clothes, as one that noddeth in a chair. For he that taketh pains, and industriously lays himself to sleep, in case any uncouth and exhorbitant fancy come unto him, cannot easily think it other than a dream. We read of Marcus Brutus (one that had his life given him by Julius Cæsar, and was also his favorite, and notwithstanding murdered him), how at Philippi, the night before he gave battle to Augustus Cæsar, he saw a fearful apparition, which is commonly related by historians as a vision; but considering the circumstances, one may easily judge to have been but a short dream. For sitting in his tent, pensive and troubled with the horror of his rash act, it was not hard for him, slumbering in the cold, to dream of that which most affrighted him; which fear, as by degrees it made him wake, so also it must needs make the apparition by degrees to vanish; and having no assurance that he slept, he could have no cause to think it a dream, or anything but a vision. And this is no very rare accident; for even they that be perfectly awake, if they be timorous and superstitious, possessed with fearful tales, and alone in the dark, are subject to the like fancies, and believe they see spirits and dead men's ghosts walking in churchyards; whereas it is either their fancy only, or else the knavery of such persons as make use of such superstitious fear, to pass disguised in the night to places they would not be known to haunt.

From this ignorance of how to distinguish dreams, and other strong fancies, from vision and sense, did arise the

greatest part of the religion of the Gentiles in time past, that worshipped satyrs, fawns, nymphs, and the like; and nowadays the opinion that rude people have of fairies, ghosts, and goblins, and of the power of witches. For, as for witches, I think not that their witchcraft is any real power; but yet that they are justly punished, for the false belief they have that they can do such mischief, joined with their purpose to do it if they can; their trade being nearer to a new religion than to a craft or science. And for fairies, and walking ghosts, the opinion of them has, I think, been on purpose either taught or not confuted, to keep in credit the use of exorcism, of crosses, of holy water, and other such inventions of ghostly men. Nevertheless, there is no doubt but God can make unnatural apparitions; but that He does it so often as men need to fear such things more than they fear the stay or change of the course of nature, which He also can stay and change, is no point of Christian faith. But evil men, under pretext that God can do anything, are so bold as to say anything when it serves their turn, though they think it untrue; it is the part of a wise man, to believe them no farther than right reason makes that which they say appear credible. If this superstitious fear of spirits were taken away, and with it, prognostics from dreams, false prophecies, and many other things depending thereon, by which crafty ambitious persons abuse the simple people, men would be much more fitted than they are for civil obedience.

And this ought to be the work of the schools; but they rather nourish such doctrine. For, not knowing what imagination or the senses are, what they receive, they teach: some saying that imaginations rise of themselves, and have no cause; others, that they rise most commonly from the will; and that good thoughts are blown (inspired) into a man by God, and evil thoughts by the Devil; or that good thoughts are poured (infused) into a man by God, and evil ones by the Devil. Some say the senses receive the species of things, and deliver them to the common sense; and the common sense delivers them over to the fancy, and the fancy to the memory, and the

memory to the judgment, like handling of things from one to another with many words making nothing understood.

The imagination that is raised in man, or any other creature indued with the faculty of imagining, by words, or other voluntary signs, is that we generally call *understanding;* and is common to man and beast. For a dog by custom will understand the call, or the rating of his master; and so will many other beasts. That understanding which is peculiar to man, is the understanding not only his will, but his conceptions and thoughts, by the sequel and contexture of the names of things into affirmations, negations, and other forms of speech; and of this kind of understanding I shall speak hereafter.

CHAPTER III

OF THE CONSEQUENCE OR TRAIN OF IMAGINATIONS

By *consequence,* or *train* of thoughts, I understand that succession of one thought to another, which is called, to distinguish it from discourse in words, *mental discourse.*

When a man thinketh on anything whatsoever, his next thought after is not altogether so casual as it seems to be. Not every thought to every thought succeeds indifferently. But as we have no imagination, whereof we have not formerly had sense, in whole or in parts; so we have no transition from one imagination to another, whereof we never had the like before in our senses. The reason whereof is this. All fancies are motions within us, relics of those made in the sense; and those motions that immediately succeeded one another in the sense, continue also together after sense: insomuch as the former coming again to take place, and be predominant, the latter followeth, by coherence of the matter moved, in such manner as water upon a plane table is drawn which way any one part of it is guided by the finger. But because in sense, to one and the same thing perceived, sometimes one

thing, sometimes another succeedeth, it comes to pass in time that in the imagining of anything, there is no certainty what we shall imagine next; only this is certain, it shall be something that succeeded the same before, at one time or another.

This train of thoughts, or mental discourse, is of two sorts. The first is *unguided, without design,* and inconstant; wherein there is no passionate thought, to govern and direct those that follow, to itself, as the end and scope of some desire or other passion: in which case the thoughts are said to wander, and seem impertinent one to another, as in a dream. Such are commonly the thoughts of men that are not only without company, but also without care of anything; though even then their thoughts are as busy as at other times, but without harmony; as the sound which a lute out of tune would yield to any man, or in tune to one that could not play. And yet in this wild ranging of the mind, a man may ofttimes perceive the way of it, and the dependence of one thought upon another. For in a discourse of our present civil war, what could seem more impertinent than to ask, as one did, what was the value of a Roman penny? Yet the coherence to me was manifest enough. For the thought of the war introduced the thought of the delivering up the king to his enemies; the thought of that, brought in the thought of the delivering up of Christ; and that again the thought of the thirty pence, which was the price of that treason; and thence easily followed that malicious question, and all this in a moment of time; for thought is quick.

The second is more constant; as being *regulated* by some desire, and design. For the impression made by such things as we desire, or fear, is strong, and permanent, or, if it cease for a time, of quick return: so strong it is sometimes as to hinder and break our sleep. From desire ariseth the thought of some means we have seen produce the like of that which we aim at; and from the thought of that, the thought of means to that mean; and so continually, till we come to some beginning within our own power. And because the end, by

the greatness of the impression, comes often to mind, in case our thoughts begin to wander, they are quickly again reduced into the way: which observed by one of the seven wise men, made him give men this precept, which is now worn out, *Respice finem;* that is to say, in all your actions, look often upon what you would have, as the thing that directs all your thoughts in the way to attain it.

The train of regulated thoughts is of two kinds: one, when of an effect imagined we seek the causes, or means that produce it; and this is common to man and beast. The other is, when imagining anything whatsoever, we seek all the possible effects that can by it be produced; that is to say, we imagine what we can do with it when we have it. Of which I have not at any time seen any sign but in man only; for this is a curiosity hardly incident to the nature of any living creature that has no other passion but sensual, such as are hunger, thirst, lust, and anger. In sum, the discourse of the mind, when it is governed by design, is nothing but seeking, or the faculty of invention, which the Latins called *sagacitas,* and *solertia*—a hunting out of the causes of some effect, present or past, or of the effects of some present or past cause. Sometimes a man seeks what he hath lost; and from that place and time wherein he misses it, his mind runs back, from place to place and time to time, to find where and when he had it; that is to say, to find some certain, and limited time and place, in which to begin a method of seeking. Again, from thence, his thoughts run over the same places and times, to find what action or other occasion might make him lose it. This we call remembrance, or calling to mind; the Latins call it *reminiscentia, as* it were a re-conning of our former actions.

Sometimes a man knows a place determinate within the compass whereof he is to seek; and then his thoughts run over all the parts thereof, in the same manner as one would sweep a room to find a jewel, or as a spaniel ranges the field till he find a scent, or as a man should run over the alphabet to start a rhyme.

Sometimes a man desires to know the event of an action;

and then he thinketh of some like action past, and the events thereof one after another; supposing like events will follow like actions. As he that foresees what will become of a criminal, re-cons what he has seen follow on the like crime before; having this order of thoughts, the crime, the officer, the prison, the judge, and the gallows. Which kind of thoughts, is called foresight, and prudence, or providence; and sometimes wisdom; though such conjecture, through the difficulty of observing all circumstances, be very fallacious. But this is certain; by how much one man has more experience of things past than another, by so much also he is more prudent, and his expectations the seldomer fail him. The present only has a being in nature; things past have a being in the memory only, but things to come have no being at all; the future being but a fiction of the mind, applying the sequels of actions passed, to the actions that are present; which with most certainty is done by him that has most experience, but not with certainty enough. And though it be called prudence when the event answereth our expectation, yet in its own nature it is but presumption. For the foresight of things to come, which is providence, belongs only to Him by Whose will they are to come. From Him only, and supernaturally, proceeds prophecy. The best prophet naturally is the best guesser; and the best guesser, he that is most versed and studied in the matters he guesses at: for he hath most signs to guess by.

A *sign* is the evident antecedent of the consequent; and contrarily, the consequent of the antecedent, when the like consequences have been observed before; and the oftener they have been observed, the less uncertain is the sign. And therefore he that has most experience in any kind of business, has most signs whereby to guess at the future time; and consequently is the most prudent; and so much more prudent than he that is new in that kind of business, as not to be equalled by any advantage of natural and extemporary wit: though perhaps many young men think the contrary.

Nevertheless it is not prudence that distinguisheth man from beast. There be beasts that at a year old observe more,

and pursue that which is for their good more prudently, than a child can do at ten.

As prudence is a *presumption* of the *future,* contracted from the *experience* of time *past;* so there is a presumption of things past taken from other things, not future, but past also. For he that hath seen by what courses and degrees a flourishing state hath first come into civil war, and then to ruin; upon the sight of the ruins of any other state, will guess the like war and the like courses have been there also. But this conjecture has the same uncertainty almost with the conjecture of the future; both being grounded only upon experience.

There is no other act of man's mind, that I can remember, naturally planted in him, so as to need no other thing to the exercise of it, but to be born a man and live with the use of his five senses. Those other faculties, of which I shall speak by and by, and which seem proper to man only, are acquired and increased by study and industry; and of most men learned by instruction, and discipline; and proceed all from the invention of words, and speech. For besides sense, and thoughts, and the train of thoughts, the mind of man has no other motion; though by the help of speech, and method, the same faculties may be improved to such a height, as to distinguish men from all other living creatures.

Whatsoever we imagine is *finite.* Therefore there is no idea or conception of anything we call *infinite.* No man can have in his mind an image of infinite magnitude, nor conceive infinite swiftness, infinite time, or infinite force, or infinite power. When we say anything is infinite, we signify only that we are not able to conceive the ends, the bounds of the things named; having no conception of the thing, but of our own inability. And therefore the name of God is used, not to make us conceive Him, for He is incomprehensible; and His greatness and power are unconceivable; but that we may honor Him. Also because whatsoever, as I said before, we conceive, has been perceived first by sense, either all at once or by parts: a man can have no thought, representing anything, not subject to sense.

No man therefore can conceive anything but he must conceive it in some place, and indued with some determinate magnitude, and which may be divided into parts; nor that anything is all in this place and all in another place at the same time; nor that two or more things can be in one and the same place at once: for none of these things ever have, nor can be incident to sense; but are absurd speeches, taken upon credit, without any signification at all, from deceived philosophers, and deceived or deceiving schoolmen.

CHAPTER IV

OF SPEECH

THE invention of *printing,* though ingenious, compared with the invention of *letters* is no great matter. But who was the first that found the use of letters, is not known. He that first brought them into Greece, men say was Cadmus, the son of Agenor, king of Phœnicia. A profitable invention for continuing the memory of time past, and the conjunction of mankind dispersed into so many and distant regions of the earth; and withal difficult, as proceeding from a watchful observation of the divers motions of the tongue, palate, lips, and other organs of speech; whereby to make as many differences of characters, to remember them. But the most noble and profitable invention of all other, was that of *speech,* consisting of *names* or *appellations,* and their connection; whereby men register their thoughts, recall them when they are past, and also declare them one to another for mutual utility and conversation; without which there had been amongst men neither commonwealth, nor society, nor contract, nor peace, no more than amongst lions, bears, and wolves. The first author of speech was God himself, that instructed Adam how to name such creatures as He presented to his sight; for the Scripture goeth no further in this matter. But this was sufficient to direct him to add more names, as the experience and use of

the creatures should give him occasion; and to join them in such manner, by degrees, as to make himself understood; and so, by succession of time, so much language might be gotten as he had found use for; though not so copious as an orator or philosopher has need of: for I do not find anything in the Scripture out of which, directly or by consequence, can be gathered that Adam was taught the names of all figures, numbers, measures, colors, sounds, fancies, relations; much less the names of words and speech, as *general, special, affirmative, negative, interrogative, optative, infinitive,* all which are useful; and least of all, of *entity, intentionality, quiddity,* and other insignificant words of the school.

But all this language gotten and augmented by Adam and his posterity, was again lost at the Tower of Babel, when, by the hand of God, every man was stricken, for his rebellion, with an oblivion of his former language. And being hereby forced to disperse themselves into several parts of the world, it must needs be that the diversity of tongues that now is, proceeded by degrees from them, in such manner as need, the mother of all inventions, taught them; and in tract of time grew everywhere more copious.

The general use of speech is to transfer our mental discourse into verbal, or the train of our thoughts into a train of words; and that for two commodities, whereof one is the registering of the consequences of our thoughts; which, being apt to slip out of our memory and put us to a new labor, may again be recalled by such words as they were marked by. So that the first use of names is to serve for *marks,* or *notes* of remembrance. Another is, when many use the same words, to signify, by their connection and order, one to another, what they conceive, or think of each matter; and also what they desire, fear, or have any other passion for. And for this use they are called *signs.* Special uses of speech are these: first, to register what by cogitation we find to be the cause of anything, present or past, and what we find things present or past may produce or effect; which, in sum, is acquiring of arts. Secondly, to show to others that knowledge which we have

attained; which is, to counsel and teach one another. Thirdly, to make known to others our wills and purposes, that we may have the mutual help of one another. Fourthly, to please and delight ourselves and others, by playing with our words, for pleasure or ornament, innocently.

To these uses, there are also four correspondent abuses. First, when men register their thoughts wrong, by the inconstancy of the signification of their words; by which they register for their conception, that which they never conceived, and so deceive themselves. Secondly, when they use words metaphorically; that is, in other sense than that they are ordained for; and thereby deceive others. Thirdly, by words, when they declare that to be their will which is not. Fourthly, when they use them to grieve one another; for seeing nature hath armed living creatures, some with teeth, some with horns, and some with hands, to grieve an enemy, it is but an abuse of speech, to grieve him with the tongue, unless it be one whom we are obliged to govern; and then it is not to grieve, but to correct and amend. . . .

Seeing then that truth consisteth in the right ordering of names in our affirmations, a man that seeketh precise truth had need to remember what every name he uses stands for, and to place it accordingly, or else he will find himself entangled in words, as a bird in lime twigs, the more he struggles the more belimed. And therefore in geometry, which is the only science that it hath pleased God hitherto to bestow on mankind, men begin at settling the significations of their words; which settling of significations they call *definitions,* and place them in the beginning of their reckoning.

By this it appears how necessary it is for any man that aspires to true knowledge, to examine the definitions of former authors; and either to correct them, where they are negligently set down, or to make them himself. For the errors of definitions multiply themselves according as the reckoning proceeds, and lead men into absurdities, which at last they see, but cannot avoid without reckoning anew from the beginning, in which lies the foundation of their errors.

From whence it happens that they which trust to books do as they that cast up many little sums into a greater, without considering whether those little sums were rightly cast up or not; and at last finding the error visible, and not mistrusting their first grounds, know not which way to clear themselves, but spend time in fluttering over their books; as birds that entering by the chimney, and finding themselves enclosed in a chamber, flutter at the false light of a glass window, for want of wit to consider which way they came in. So that in the right definition of names lies the first use of speech, which is the acquisition of science; and in wrong, or no definitions, lies the first abuse, from which proceed all false and senseless tenets: which make those men that take their instruction from the authority of books, and not from their own meditation, to be as much below the condition of ignorant men as men endued with true science are above it. For between true science and erroneous doctrines, ignorance is in the middle. Natural sense and imagination are not subject to absurdity. Nature itself cannot err; and as men abound in copiousness of language, so they become more wise, or more mad, than ordinary. Nor is it possible without letters for any man to become either excellently wise, or, unless his memory be hurt by disease or ill constitution of organs, excellently foolish. For words are wise men's counters, they do but reckon by them; but they are the money of fools, that value them by the authority of an Aristotle, a Cicero, or a Thomas, or any other doctor whatsoever, if but a man. . . .

CHAPTER V

OF REASON AND SCIENCE

WHEN a man *reasoneth,* he does nothing else but conceive a sum total, from *addition* of parcels; or conceive a remainder, from *subtraction* of one sum from another; which, if it be done by words, is conceiving of the consequence of the

names of all the parts, to the name of the whole; or from the names of the whole and one part, to the name of the other part. And though in some things, as in numbers, besides adding and subtracting, men name other operations, as multiplying and dividing, yet they are the same; for multiplication is but adding together of things equal; and division, but subtracting of one thing as often as we can. These operations are not incident to numbers only, but to all manner of things that can be added together and taken one out of another. For as arithmeticians teach to add and subtract in numbers; so the geometricians teach the same in lines, figures, solid and superficial, angles, proportions, times, degrees of swiftness, force, power, and the like; the logicians teach the same in consequences of words; adding together two names to make an affirmation, and two affirmations to make a syllogism, and many syllogisms to make a demonstration; and from the sum, or conclusion of a syllogism, they subtract one proposition to find the other. Writers of politics add together pactions to find men's duties; and lawyers, laws and facts, to find what is right and wrong in the actions of private men. In sum, in what matter soever there is place for addition and subtraction, there also is place for reason; and where these have no place, there reason has nothing at all to do.

Out of all which we may define, that is to say determine, what that is which is meant by this word *reason,* when we reckon it amongst the faculties of the mind. For reason, in this sense, is nothing but *reckoning,* that is adding and subtracting, of the consequences of general names agreed upon for the marking and signifying of our thoughts: I say *marking* them when we reckon by ourselves, and *signifying* when we demonstrate or approve our reckonings to other men.

And, as in arithmetic, unpractised men must, and professors themselves may often, err, and cast up false; so also in any other subject of reasoning, the ablest, most attentive, and most practised men may deceive themselves, and infer false conclusions; not but that reason itself is always right reason, as well as arithmetic is a certain and infallible art: but no one

man's reason, nor the reason of any one number of men, makes the certainty; no more than an account is therefore well cast up because a great many men have unanimously approved it. And therefore, as when there is a controversy in an account, the parties must by their own accord set up, for right reason, the reason of some arbitrator or judge, to whose sentence they will both stand, or their controversy must either come to blows or be undecided, for want of a right reason constituted by nature; so it is also in all debates of what kind soever. And when men that think themselves wiser than all others, clamor and demand right reason for judge, yet seek no more but that things should be determined by no other men's reason but their own, it is as intolerable in the society of men, as it is in play after trump is turned, to use for trump on every occasion that suite whereof they have most in their hand. For they do nothing else that will have every of their passions, as it comes to bear sway in them, to be taken for right reason, and that in their own controversies; bewraying their want of right reason, by the claim they lay to it.

The use and end of reason is not the finding of the sum and truth of one, or a few consequences, remote from the first definitions, and settled significations of names; but to begin at these, and proceed from one consequence to another. For there can be no certainty of the last conclusion, without a certainty of all those affirmations and negations on which it was grounded and inferred. As when a master of a family, in taking an account, casteth up the sums of all the bills of expense into one sum, and not regarding how each bill is summed up by those that give them in account, nor what it is he pays for; he advantages himself no more than if he allowed the account in gross, trusting to every of the accountants' skill and honesty: so also in reasoning of all other things, he that takes up conclusions on the trust of authors, and doth not fetch them from the first items in every reckoning, which are the significations of names settled by definitions, loses his labor, and does not know anything, but only believeth.

When a man reckons without the use of words, which may

be done in particular things, as when upon the sight of any one thing, we conjecture what was likely to have preceded, or is likely to follow upon it; if that which he thought likely to follow, follows not, or that which he thought likely to have preceded it, hath not preceded it, this is called *error;* to which even the most prudent men are subject. But when we reason in words of general signification, and fall upon a general inference which is false, though it be commonly called error, it is indeed an *absurdity,* or senseless speech. For error is but a deception, in presuming that somewhat is past or to come; of which, though it were not past, or not to come, yet there was no impossibility discoverable. But when we make a general assertion, unless it be a true one, the possibility of it is inconceivable. And words whereby we conceive nothing but the sound, are those we call absurd, insignificant, and nonsense. And therefore if a man should talk to me of a round quadrangle, or, accidents of bread in cheese, or immaterial substances, or of a free subject, a free will, or any *free,* but free from being hindered by opposition; I should not say he were in an error, but that his words were without meaning, that is to say, absurd.

I have said before, in the second chapter, that a man did excel all other animals in this faculty, that when he conceived anything whatsoever, he was apt to enquire the consequences of it, and what effects he could do with it. And now I add this other degree of the same excellence, that he can by words reduce the consequences he finds to general rules, called *theorems,* or *aphorisms;* that is, he can reason, or reckon, not only in number, but in all other things whereof one may be added unto, or subtracted from another.

But this privilege is allayed by another; and that is, by the privilege of absurdity, to which no living creature is subject but man only. And of men, those are of all most subject to it that profess philosophy. For it is most true that Cicero saith of them somewhere, that there can be nothing so absurd but may be found in the books of philosophers. And the reason is manifest. For there is not one of them that begins

his ratiocination from the definitions, or explications of the names they are to use; which is a method that hath been used only in geometry, whose conclusions have thereby been made indisputable.

(i) The first cause of absurd conclusions I ascribe to the want of method, in that they begin not their ratiocination from definitions; that is, from settled significations of their words: as if they could cast account without knowing the value of the numeral words, one, two, and three.

And whereas all bodies enter into account upon divers considerations, which I have mentioned in the precedent chapter; these considerations being diversely named, divers absurdities proceed from the confusion, and unfit connection of their names into assertions. And therefore:

(ii) The second cause of absurd assertions, I ascribe to the giving of names of *bodies* to *accidents,* or of *accidents* to *bodies;* as they do that say, faith is 'infused,' or 'inspired'; when nothing can be poured, or breathed into anything, but body; and that, extension is body; that phantasms are spirits, etc.

(iii) The third I ascribe to the giving of the names of the *accidents of bodies without us,* to the *accidents of our own bodies;* as they do that say the color is in the body, the sound is in the air, etc.

(iv) The fourth, to the giving of the names of *bodies* to *names or speeches;* as they do that say that there be things universal; that a living creature is genus, or a general thing, etc.

(v) The fifth, to the giving of the names of *accidents* to *names and speeches;* as they do that say the nature of a thing is its definition, a man's command is his will, and the like.

(vi) The sixth, to the use of metaphors, tropes, and other rhetorical figures, instead of words proper. For though it be lawful to say, for example, in common speech, "the way goeth, or leadeth hither, or thither"; "the proverb says this or that," whereas ways cannot go, nor proverbs speak; yet in reckoning, and seeking of truth, such speeches are not to be admitted.

(vii) The seventh, to names that signify nothing, but are taken up and learned by rote from the schools, as 'hypostatical', 'transubstantiate', 'consubstantiate', 'eternal-now', and the like canting of schoolmen.

To him that can avoid these things it is not easy to fall into any absurdity, unless it be by the length of an account; wherein he may perhaps forget what went before. For all men by nature reason alike, and well, when they have good principles. For who is so stupid, as both to mistake in geometry, and also to persist in it when another detects his error to him?

By this it appears that reason is not, as sense and memory, born with us; nor gotten by experience only, as prudence is: but attained by industry; first in apt imposing of names; and secondly by getting a good and orderly method in proceeding from the elements, which are names, to assertions made by connection of one of them to another; and so to syllogisms, which are the connections of one assertion to another, till we come to a knowledge of all the consequences of names appertaining to the subject in hand; and that is it, men call *science*. And whereas sense and memory are but knowledge of fact, which is a thing past and irrevocable, science is the knowledge of consequences, and dependence of one fact upon another: by which, out of that we can presently do, we know how to do something else when we will, or the like another time; because when we see how anything comes about, upon what causes, and by what manner; when the like causes come into our power, we see how to make it produce the like effects.

Children therefore are not endued with reason at all, till they have attained the use of speech; but are called reasonable creatures, for the possibility apparent of having the use of reason in time to come. And the most part of men, though they have the use of reasoning a little way, as in numbering to some degree, yet it serves them to little use in common life; in which they govern themselves, some better, some worse, according to their differences of experience, quickness of

memory, and inclinations to several ends; but specially according to good or evil fortune, and the errors of one another. For as for *science,* or certain rules of their actions, they are so far from it, they know not what it is. Geometry they have thought conjuring; but for other sciences, they who have not been taught the beginnings and some progress in them, that they may see how they be acquired and generated, are in this point like children, that having no thought of generation, are made believe by the women that their brothers and sisters are not born, but found in the garden.

But yet they that have no science, are in better and nobler condition, with their natural prudence, than men that by misreasoning, or by trusting them that reason wrong, fall upon false and absurd general rules. For ignorance of causes, and of rules, does not set men so far out of their way, as relying on false rules, and taking for causes of what they aspire to, those that are not so, but rather causes of the contrary.

To conclude, the light of human minds is perspicuous words, but by exact definitions first snuffed, and purged from ambiguity: reason is the *pace;* increase of science, the *way;* and the benefit of mankind, the *end.* And, on the contrary, metaphors, and senseless and ambiguous words, are like *ignes fatui;* and reasoning upon them is wandering amongst innumerable absurdities; and their end, contention and sedition, or contempt.

As much experience is *prudence,* so is much science *sapience.* For though we usually have one name of wisdom for them both, yet the Latins did always distinguish between *prudentia* and *sapientia,* ascribing the former to experience, the latter to science. But to make their difference appear more clearly, let us suppose one man endued with an excellent natural use and dexterity in handling his arms; and another to have added to that dexterity, an acquired science, of where he can offend, or be offended by his adversary, in every possible posture or guard: the ability of the former would be to the ability of the latter, as prudence to sapience; both useful, but the latter infallible. But they that trusting only to

the authority of books, follow the blind blindly, are like him that, trusting to the false rules of a master of fence, ventures presumptuously upon an adversary, that either kills or disgraces him.

The signs of science are some, certain and infallible; some, uncertain. Certain, when he that pretendeth the science of anything, can teach the same—that is to say, demonstrate the truth thereof perspicuously to another; uncertain, when only some particular events answer to his pretence, and upon many occasions prove so as he says they must. Signs of prudence are all uncertain; because to observe by experience, and remember all circumstances that may alter the success, is impossible. But in any business whereof a man has not infallible science to proceed by, to forsake his own natural judgment, and be guided by general sentences read in authors and subject to many exceptions, is a sign of folly, and generally scorned by the name of pedantry. And even of those men themselves that in councils of the commonwealth love to show their reading of politics and history, very few do it in their domestic affairs, where their particular interest is concerned; having prudence enough for their private affairs, but in public they study more the reputation of their own wit than the success of another's business.

CHAPTER VI

OF THE INTERIOR BEGINNINGS OF VOLUNTARY MOTIONS; COMMONLY CALLED THE PASSIONS; AND THE SPEECHES BY WHICH THEY ARE EXPRESSED

THERE be in animals, two sorts of *motions* peculiar to them: one called *vital,* begun in generation and continued without interruption through their whole life; such as are the course of the blood, the pulse, the breathing, the concoction, nutrition, excretion, etc., to which motions there needs no

help of imagination: the other is *animal motion,* otherwise called *voluntary motion;* as to go, to speak, to move any of our limbs, in such manner as is first fancied in our minds. That sense is motion in the organs and interior parts of man's body, caused by the action of the things we see, hear, etc.; and that fancy is but the relics of the same motion, remaining after sense, has been already said in the first and second chapters. And because going, speaking, and the like voluntary motions, depend always upon a precedent thought of *whither, which way,* and *what;* it is evident that the imagination is the first internal beginning of all voluntary motion. And although unstudied men do not conceive any motion at all to be there, where the thing moved is invisible; or the space it is moved in is, for the shortness of it, insensible; yet that doth not hinder but that such motions are. For let a space be never so little, that which is moved over a greater space, whereof that little one is part, must first be moved over that. These small beginnings of motion, within the body of man, before they appear in walking, speaking, striking, and other visible actions, are commonly called *endeavor.*

This endeavor, when it is toward something which causes it, is called *appetite,* or *desire;* the latter being the general name, and the other oftentimes restrained to signify the desire of food, namely hunger and thirst. And when the endeavor is fromward something, it is generally called *aversion.* These words, appetite and aversion, we have from the Latins; and they both of them signify the motions, one of approaching, the other of retiring. So also do the Greek words for the same, which are ὁρμή and ἀφορμή. For nature itself does often press upon men those truths which afterwards, when they look for somewhat beyond nature, they stumble at. For the Schools find in mere appetite to go, or move, no actual motion at all; but because some motion they must acknowledge, they call it metaphorical motion; which is but an absurd speech, for though words may be called metaphorical, bodies and motions can not.

That which men desire, they are also said to *love;* and to

hate those things for which they have aversion. So that desire and love are the same thing; save that by desire, we always signify the absence of the object; by love, most commonly the presence of the same. So also by aversion, we signify the absence; and by hate, the presence of the object.

Of appetities and aversions, some are born with men; as appetite of food, appetite of excretion, and exoneration, which may also and more properly be called aversions, from somewhat they feel in their bodies; and some other appetites, not many. The rest, which are appetites of particular things, proceed from experience, and trial of their effects upon themselves or other men. For of things we know not at all, or believe not to be, we can have no further desire than to taste and try. But aversion we have for things not only which we know have hurt us, but also that we do not know whether they will hurt us or not.

Those things which we neither desire nor hate, we are said to contemn; *contempt* being nothing else but an immobility or contumacy of the heart in resisting the action of certain things, and proceeding from the heart is already moved otherwise by other more potent objects, or from want of experience of them.

And because the constitution of a man's body is in continual mutation, it is impossible that all the same things should always cause in him the same appetites and aversions; much less can all men consent in the desire of almost any one and the same object.

But whatsoever is the object of any man's appetite or desire, that is it which he for his part calleth *good;* and the object of his hate and aversion, *evil;* and of his contempt, *vile* and *inconsiderable.* For these words of good, evil, and contemptible, are ever used with relation to the person that useth them: there being nothing simply and absolutely so; nor any common rule of good and evil to be taken from the nature of the objects themselves; but from the person of the man, where there is no commonwealth; or, in a commonwealth, from the person that representeth it; or from an

arbitrator or judge, whom men disagreeing shall by consent set up, and make his sentence the rule thereof.

The Latin tongue has two words, whose significations approach to those of good and evil, but are not precisely the same; and those are *pulchrum* and *turpe*. Whereof the former signifies that which by some apparent signs promiseth good; and the latter, that which promiseth evil. But in our tongue we have not so general names to express them by. But for *pulchrum* we say in some things, *fair;* in others, *beautiful,* or *handsome,* or *gallant,* or *honorable,* or *comely,* or *amiable;* and for *turpe, foul, deformed, ugly, base, nauseous,* and the like, as the subject shall require: all which words, in their proper places, signify nothing else but the *mien,* or countenance, that promiseth good and evil. So that of good there be three kinds: good in the promise, that is *pulchrum;* good in effect, as the end desired, which is called *jucundum, delightful;* and good as the means, which is called *utile, profitable:* and as many of evil; for evil in promise, is that they call *turpe;* evil in effect, and end, is *molestum, unpleasant, troublesome;* and evil in the means, *inutile, unprofitable, hurtful.*

As, in sense, that which is really within us, is, as I have said before, only motion, caused by the action of external objects; but in appearance—to the sight, light and color; to the ear, sound; to the nostril, odor, etc.: so, when the action of the same object is continued from the eyes, ears, and other organs to the heart, the real effect there is nothing but motion, or endeavor; which consisteth in *appetite* or *aversion,* to or from the object moving. But the appearance, or sense, of that motion is that we either call *delight* or *trouble* of mind.

This motion, which is called appetite—and, for the apparence of it, delight, and pleasure—seemeth to be a corroboration of vital motion, and a help thereunto; and therefore such things as caused delight, were not improperly called *jucunda, a juvando,* from helping or fortifying; and the contrary, *molesta, offensive,* from hindering and troubling the motion vital.

Pleasure, therefore, or delight, is the apparence, or sense

of good; and molestation, or displeasure, the apparence, or sense of evil. And consequently all appetite, desire, and love, is accompanied with some delight more or less; and all hatred and aversion, with more or less displeasure and offence.

Of pleasures or delights, some arise from the sense of an object present; and those may be called *pleasure of sense;* the word sensual, as it is used by those only that condemn them, having no place till there be laws. Of this kind are all onerations and exonerations of the body; as also all that is pleasant, in the sight, hearing, smell, taste, or touch. Others arise from the expectation that proceeds from foresight of the end, or consequence of things; whether those things in the sense please or displease. And these are *pleasures of the mind* of him that draweth those consequences, and are generally called *joy.* In the like manner, displeasures are some in the sense, and called *pain;* others in the expectation of consequences, and are called *grief.*

These simple passions called appetite, desire, love, aversion, hate, joy, and grief, have their names for divers considerations diversified. As first, when they one succeed another, they are diversely called from the opinion men have of the likelihood of attaining what they desire. Secondly, from the object loved or hated. Thirdly, from the consideration of many of them together. Fourthly, from the alteration or succession itself.

For appetite, with an opinion of attaining, is called *hope.*

The same, without such opinion, *despair.*

Aversion, with opinion of *hurt* from the object, *fear.*

The same, with hope of avoiding that hurt by resistance, *courage.*

Sudden courage, *anger.*

Constant hope, *confidence* of ourselves.

Constant despair, *diffidence* of ourselves.

Anger for great hurt done to another, when we conceive the same to be done by injury, *indignation.*

Desire of good to another, *benevolence, good will, charity.* If to man generally, *good nature.*

Desire of riches, *covetousness:* a name used always in signification of blame; because men contending for them, are displeased with one another attaining them; though the desire in itself be to be blamed, or allowed, according to the means by which these riches are sought.

Desire of office, or precedence, *ambition:* a name used also in the worse sense, for the reason before mentioned.

Desire of things that conduce but a little to our ends, and fear of things that are of but little hindrance, *pusillanimity.*

Contempt of little helps and hindrances, *magnanimity.*

Magnanimity in danger of death or wounds, *valor, fortitude.*

Magnanimity in the use of riches, *liberality.*

Pusillanimity in the same, *wretchedness, miserableness,* or *parsimony;* as it is liked or disliked.

Love of persons for society, *kindness.*

Love of persons for pleasing the sense only, *natural lust.*

Love of the same, acquired from rumination, that is, imagination of pleasure past, *luxury.*

Love of one singularly, with desire to be singularly beloved, *the passion of love.* The same, with fear that the love is not mutual, *jealousy.*

Desire, by doing hurt to another, to make him condemn some fact of his own, *revengefulness.*

Desire to know why, and how, *curiosity;* such as is in no living creature but *man:* so that man is distinguished, not only by his reason, but also by this singular passion, from other animals; in whom the appetite of food, and other pleasures of sense, by predominance, take away the care of knowing causes; which is a lust of the mind, that by a perseverance of delight in the continual and indefatigable generation of knowledge, exceedeth the short vehemence of any carnal pleasure.

Fear of power invisible, feigned by the mind, or imagined from tales publicly allowed, *religion;* not allowed, *superstition.* And when the power imagined, is truly such as we imagine, *true religion.*

Fear without the apprehension of why, or what, *panic terror:* called so from the fables that make Pan the author of

them; whereas, in truth, there is always in him that so feareth first, some apprehension of the cause, though the rest run away by example, everyone supposing his fellow to know why. And therefore this passion happens to none but in a throng, or multitude of people.

Joy, from apprehension of novelty, *admiration;* proper to man, because it excites the appetite of knowing the cause.

Joy arising from imagination of a man's own power and ability, is that exultation of the mind which is called *glorying:* which if grounded upon the experience of his own former actions, is the same with *confidence;* but if grounded on the flattery of others, or only supposed by himself for delight in the consequences of it, is called *vain-glory:* which name is properly given; because a well grounded confidence begetteth attempt, whereas the supposing of power does not, and is therefore rightly called *vain.*

Grief, from opinion of want of power, is called *dejection* of mind.

The vain-glory which consisteth in the feigning or supposing of abilities in ourselves, which we know are not, is most incident to young men, and nourished by the histories, or fictions, of gallant persons; and is corrected oftentimes by age and employment.

Sudden glory is the passion which maketh those grimaces called *laughter;* and is caused either by some sudden act of their own, that pleaseth them; or by the apprehension of some deformed thing in another, by comparison whereof they suddenly applaud themselves. And it is incident most to them that are conscious of the fewest abilities in themselves; who are forced to keep themselves in their own favor by observing the imperfections of other men. And therefore much laughter at the defects of others is a sign of pusillanimity. For of great minds, one of the proper works is, to help and free others from scorn; and compare themselves only with the most able.

On the contrary, sudden dejection is the passion that causeth *weeping;* and is caused by such accidents as suddenly take away some vehement hope, or some prop of their power: and

they are most subject to it that rely principally on helps external, such as are women and children. Therefore some weep for the loss of friends, others for their unkindness, others for the sudden stop made to their thoughts of revenge, by reconciliation. But in all cases, both laughter and weeping are sudden motions; custom taking them both away. For no man laughs at old jests, or weeps for an old calamity.

Grief for the discovery of some defect of ability, is *shame,* or the passion that discovereth itself in *blushing;* and consisteth in the apprehension of something dishonorable; and in young men, is a sign of the love of good reputation, and commendable; in old men it is a sign of the same, but because it comes too late, not commendable.

The contempt of good reputation is called *impudence.*

Grief for the calamity of another is *pity,* and ariseth from the imagination that the like calamity may befall himself; and therefore is called also *compassion,* and in the phrase of this present time a *fellow-feeling:* and therefore for calamity arriving from great wickedness, the best men have the least pity; and for the same calamity those hate pity that think themselves least obnoxious to the same.

Contempt or little sense of the calamity of others, is that which men call *cruelty;* proceeding from security of their own fortune. For that any man should take pleasure in other men's great harms, without other end of his own, I do not conceive it possible.

Grief for the success of a competitor in wealth, honor, or other good, if it be joined with endeavor to enforce our own abilities to equal or exceed him, is called *emulation:* but joined with endeavor to supplant or hinder a competitor, *envy.*

When in the mind of man appetites and aversions, hopes and fears, concerning one and the same thing, arise alternately; and divers good and evil consequences of the doing or omitting the thing propounded, come successively into our thoughts; so that sometimes we have an appetite to it, sometimes an aversion from it, sometimes hope to be able to do it,

sometimes despair or fear to attempt it; the whole sum of desires, aversions, hopes, and fears, continued till the thing be either done or thought impossible, is that we call *deliberation.*

Therefore of things past there is no deliberation; because manifestly impossible to be changed: nor of things known to be impossible, or thought so; because men know, or think, such deliberation vain. But of things impossible which we think possible, we may deliberate; not knowing it is in vain. And it is called *de-liberation* because it is a putting an end to the *liberty* we had of doing, or omitting, according to our own appetite or aversion.

This alternate succession of appetites, aversions, hopes, and fears, is no less in other living creatures than in man; and therefore beasts also deliberate.

Every deliberation is then said to *end,* when that whereof they deliberate is either done or thought impossible; because till then we retain the liberty of doing or omitting, according to our appetite or aversion.

In deliberation, the last appetite or aversion immediately adhering to the action, or to the omission thereof, is that we call the *will,*—the act, not the faculty, of willing. And beasts that have deliberation, must necessarily also have will. The definition of the will given commonly by the Schools, that it is a *rational appetite,* is not good. For if it were, then could there be no voluntary act against reason. For a *voluntary act* is that which proceedeth from the will, and no other. But if instead of a rational appetite, we shall say an appetite resulting from a precedent deliberation, then the definition is the same that I have given here. *Will,* therefore, *is the last appetite in deliberating.* And though we say in common discourse, a man had a will once to do a thing, that nevertheless he forbore to do; yet that is properly but an inclination, which makes no action voluntary; because the action depends not of it, but of the last inclination or appetite. For if the intervenient appetites make any action voluntary, then by the same reason all intervenient aversions should make the same action

involuntary; and so one and the same action should be both voluntary and involuntary.

By this it is manifest that not only actions that have their beginning from covetousness, ambition, lust, or other appetites to the thing propounded, but also those that have their beginning from aversion, or fear of those consequences that follow the omission, are *voluntary actions*. . . .

CHAPTER VII

OF THE ENDS, OR RESOLUTIONS OF DISCOURSE

OF ALL DISCOURSE governed by desire of knowledge, there is at last an *end,* either by attaining or by giving over. And in the chain of discourse, wheresoever it be interrupted, there is an end for that time.

If the discourse be merely mental, it consisteth of thoughts that the thing will be, and will not be; or that it has been, and has not been, alternately. So that wheresoever you break off the chain of the man's discourse, you leave him in a presumption of 'it will be', or 'it will not be'; or 'it has been', or 'has not been'. All which is *opinion.* And that which is alternate appetite, in deliberating concerning good and evil; the same is alternate opinion, in the enquiry of the truth of past and future. And as the last appetite in deliberation, is called the *will;* so the last opinion in search of the truth of past, and future, is called the *judgment,* or *resolute and final sentence* of him that discourseth. And as the whole chain of appetites alternate, in the question of good or bad, is called *deliberation;* so the whole chain of opinions alternate, in the question of true or false, is called *doubt.*

No discourse whatsoever can end in absolute knowledge of fact, past or to come. For, as for the knowledge of fact, it is originally, sense; and ever after, memory. And for the knowledge of consequence, which I have said before is called

science, it is not absolute but conditional. No man can know by discourse that this or that is, has been, or will be; which is to know absolutely: but only, that if this be, that is; if this has been, that has been; if this shall be, that shall be: which is to know conditionally; and that not the consequence of one thing to another, but of one name of a thing, to another name of the same thing.

And therefore, when the discourse is put into speech, and begins with the definitions of words, and proceeds by connection of the same into general affirmations, and of these again into syllogisms; the end or last sum is called the conclusion; and the thought of the mind by it signified, is that conditional knowledge, or knowledge of the consequence of words, which is commonly called *science.* But if the first ground of such discourse be not definitions, or if the definitions be not rightly joined together into syllogisms, then the end or conclusion is again *opinion,* namely of the truth of somewhat said, though sometimes in absurd and senseless words, without possibility of being understood. When two or more men know of one and the same fact, they are said to be *conscious* of it one to another; which is as much as to know it together. And because such are fittest witnesses of the facts of one another, or of a third; it was, and ever will be reputed a very evil act, for any man to speak against his *conscience,* or to corrupt or force another so to do: insomuch that the plea of conscience has been always hearkened unto very diligently in all times. Afterwards, men made use of the same word metaphorically, for the knowledge of their own secret facts and secret thoughts; and therefore it is rhetorically said that the conscience is a thousand witnesses. And last of all, men, vehemently in love with their own new opinions, though never so absurd, and obstinately bent to maintain them, gave those their opinions also that reverenced name of conscience, as if they would have it seem unlawful to change or speak against them; and so pretend to know they are true, when they know at most but that they think so.

When a man's discourse beginneth not at definitions, it

beginneth either at some other contemplation of his own, and then it is still called opinion; or it beginneth at some saying of another, of whose ability to know the truth, and of whose honesty in not deceiving, he doubteth not; and then the discourse is not so much concerning the thing as the person; and the resolution is called *belief,* and *faith:* faith, *in* the man; belief, both *of* the man, and *of* the truth of what he says. So that in belief are two opinions: one of the saying of the man; the other of his virtue. To *have faith in,* or *trust to,* or *believe a man,* signify the same thing; namely, an opinion of the veracity of the man: but to *believe what is said,* signifieth only an opinion of the truth of the saying. But we are to observe that this phrase, 'I believe in'; as also the Latin, *credo in;* and the Greek, πιστεύω εἰς, are never used but in the writings of divines. Instead of them, in other writings are put, 'I believe him', 'I trust him', 'I have faith in him', 'I rely on him'; and in Latin *credo illi, fido illi;* and in Greek, πιστεύω αὐτῷ: and that this singularity of the ecclesiastic use of the word hath raised many disputes about the right object of the Christian faith.

But by *believing in,* as it is in the creed, is meant not trust in the person, but confession and acknowledgment of the doctrine. For not only Christians but all manner of men do so believe in God, as to hold all for truth they hear Him say, whether they understand it or not; which is all the faith and trust can possibly be had in any person whatsoever: but they do not all believe the doctrine of the creed.

From whence we may infer, that when we believe any saying, whatsoever it be, to be true, from arguments taken not from the thing itself, or from the principles of natural reason, but from the authority and good opinion we have of him that hath said it; then is the speaker, or person we believe in or trust in, and whose word we take, the object of our faith; and the honor done in believing, is done to him only. And consequently, when we believe that the Scriptures are the word of God, having no immediate revelation from God Himself, our belief, faith, and trust is in the Church; whose word we take,

and acquiesce therein. And they that believe that which a prophet relates unto them in the name of God, to take the word of the prophet, do honor to him, and in him trust and believe, touching the truth of what he relateth, whether he be a true or a false prophet. And so it is also with all other history. For if I should not believe all that is written by historians, of the glorious acts of Alexander or Cæsar, I do not think the ghost of Alexander or Cæsar had any just cause to be offended; or anybody else but the historian. If Livy say the gods made once a cow speak, and we believe it not; we distrust not God therein, but Livy. So that it is evident, that whatsoever we believe, upon no other reason than what is drawn from authority of men only, and their writings; whether they be sent from God or not, is faith in men only. . . .

[Chapter VIII treats "Of the Virtues Commonly Called Intellectual, and Their Contrary Defects." The intellectual virtues are of two sorts, natural and acquired. Natural virtue consists principally in two things: "celerity of imagining, that is swift succession of one thought to another; and steady direction to some approved end." Those who observe well the similitudes of things have a good *fancy,* while those apt at discerning the differences between them are of good *judgment.* "But without steadiness, and direction to some end, a great fancy is one kind of madness"; hence, "where wit is wanting, it is not fancy that is wanting but discretion. Judgment therefore without fancy is wit, but fancy without judgment, not." Good judgment of how consequences affect some design "is called prudence; and depends on much experience, and memory of the like things, and their consequences heretofore. In which there is not much difference of men, as there is in their fancies and judgment; because the experience of men equal in age, is not much unequal as to the quantity, but lies in different occasions; everyone having his private designs." Acquired wit "there is none but reason; which is grounded on the right use of speech and produceth the sciences." The difference between men's wits is caused by the differences of their passions. "The passions that most of all cause the difference of wit, are principally, the more or less desire of power, of riches, of knowledge, and of honor. All which may be reduced to the first, that

is, desire of power." Just "as to have no desire, is to be dead: so to have weak passions, is dullness; and to have passions indifferently for everything, giddiness, and distraction; and to have stronger and more vehement passions for anything than is ordinarily seen in others, is that which men call madness." Thus pride, leading to an excess of anger, produces the madness of rage or fury; dejection subjects a man to causeless fears producing the madness called melancholy; and, in sum, "all passions that produce strange and unusual behavior, are called by the general name of madness." That madness is "nothing else but too much appearing passion" is evidenced by the behavior of men when subjected to mass stimulation as in crowds and mobs, when under the influence of wine, etc. In the remainder of the chapter Hobbes argues against the alternative notion (inconsistent with his materialism) that madmen are demoniacs, possessed with spirits, and, in particular, that the references in scripture to demoniac possession can be interpreted as metaphorical expressions for 'possession' by a ruling passion. He concludes with a stinging characterization of the schoolmen, whose abuse of words leads to a kind of absurdity that "may rightly be numbered amongst the many sorts of madness"; for they reify abstractions and make words into ghosts. When men write whole volumes of such stuff, are they not mad, or intend to make others so?"

Chapter IX, "Of the Several Subjects of Knowledge," is a mere page in which Hobbes defines the two kinds of knowledge: "whereof one is *knowledge of fact,* the other *knowledge of the consequence of one affirmation to another.* The former is nothing else but sense and memory, and is *absolute knowledge;* as when we see a fact doing, or remember it done: and this is the knowledge required in a witness. The latter is called *science,* and is *conditional;* as when we know that, if the figure shown be a circle, then any straight line through the center shall divide it into two equal parts. And this is the knowledge required in a philosopher; that is to say, of him that pretends to reasoning." To this chapter Hobbes appends a table showing his division of the sciences.

Chapter X, "Of Power, Worth, Dignity, Honor, and Worthiness", is of little importance. Hobbes defines the terms given in the title, and enumerates the different kinds of honor or dishonor that a man may have.

Chapter XI treats "Of the Difference of Manners." "By manners, I mean not here, decency of behavior; as how one should

salute another, or how a man should wash his mouth, or pick his teeth before company, and such other points of the small morals; but those qualities of mankind that concern their living together in peace and unity. To which end we are to consider that the felicity of this life consisteth not in the repose of a mind satisfied. For there is no such *finis ultimus,* utmost aim, nor *summum bonum,* greatest good, as is spoken of in the books of the old moral philosophers. Nor can a man any more live, whose desires are at an end, than he whose senses and imaginations are at a stand. Felicity is a continual progress of the desire from one object to another; the attaining of the former being still but the way to the latter. The cause whereof is, that the object of man's desire, is not to enjoy once only and for one instant of time, but to assure forever the way of his future desire. And therefore the voluntary actions and inclinations of all men, tend not only to the procuring, but also to the assuring of a contented life; and differ only in the way; which ariseth partly from the diversity of passions in divers men, and partly from the difference of the knowledge or opinion each one has of the causes which produce the effect desired." Hence all men have "a perpetual and restless desire of power after power, that ceaseth only in death," because no man can "assure the power and means to live well, which he hath present, without the acquisition of more." Competition inclines men to "contention, enmity, and war," but the "desire of ease," or "fear of death and wounds," or "desire of knowledge and arts of peace," or "desire of praise," all dispose men to seek peace in obedience to a common power. In the remainder of the chapter Hobbes discusses the causes of various motives to sedition or conformity.

Chapter XII is "Of Religion." Religion is peculiar to man. Men alone are inquisitive of the causes of events, particularly in what concerns their own good or evil fortune, and to think that everything which has a beginning also has a specific cause; and therefore, unlike the beasts, whose only felicity is in "the enjoying of their quotidian food, ease, and lusts," they suffer "a perpetual solicitude of the time to come." Now "this perpetual fear, always accompanying mankind in the ignorance of causes, as it were in the dark, must needs have for object something"; hence men invoke the power of invisible things, which they suppose incorporeal, although they know not how these supposed ghosts or spirits effect anything. To these powers invisible, as beings to be feared

and honored, men extend worship, and "using to conjecture of the time to come, by the time past" they are apt to take casual things for signs of their intention. "And in these four things, opinion of ghosts, ignorance of second causes, devotion towards what men fear, and taking of things casual for prognostics, consisteth the natural seed of *religion* . . ." The Gentiles have cultivated these seeds according to their own invention, the Jews and Christians by God's commandment; "but both sorts have done it with a purpose to make those men that relied on them, the more apt to obedience, laws, peace, charity, and civil society."

Having described the character of religion among the Gentiles, and the way in which it was instituted and used for the enforcement of law and order, Hobbes concludes the chapter with a discussion of the "causes of the weakening of men's faith." All "formed religion" is founded in the first instance upon the faith that the multitude have in some one person whom they believe to be a wise and holy man supernaturally inspired. It follows that "when they that have the government of religion, shall come to have either the wisdom of those men, their sincerity, or their love suspected; or when they shall be unable to show any probable token of divine revelation; that the religion which they desire to uphold, must be suspected likewise; and, without the fear of the civil sword, contradicted and rejected." These causes led the Israelites several times to revolt from the worship of the true God, they enabled the Apostles and Evangelists to supplant the religion of the Gentiles which had everywhere fallen into contempt, they brought about in many parts of Christendom the abolition of the religion of the church of Rome, and they have produced dissent "even in that church that hath presumed most of reformation,"—from which we "may attribute all the changes of religion in the world, to one and the same cause; and that is, unpleasing priests."]

CHAPTER XIII

OF THE NATURAL CONDITION OF MANKIND AS CONCERNING THEIR FELICITY, AND MISERY

NATURE hath made men so equal, in the faculties of the body and mind; as that, though there be found one man sometimes manifestly stronger in body or of quicker mind than another, yet when all is reckoned together, the difference between man and man is not so considerable, as that one man can thereupon claim to himself any benefit, to which another may not pretend as well as he. For as to the strength of body, the weakest has strength enough to kill the strongest, either by secret machination, or by confederacy with others that are in the same danger with himself.

And as to the faculties of the mind—setting aside the arts grounded upon words, and especially that skill of proceeding upon general and infallible rules, called science; which very few have, and but in few things; as being not a native faculty, born with us; nor attained, as prudence, while we look after somewhat else—I find yet a greater equality amongst men, than that of strength. For prudence is but experience, which equal time equally bestows on all men, in those things they equally apply themselves unto. That which may perhaps make such equality incredible, is but a vain conceit of one's own wisdom, which almost all men think they have in a greater degree than the vulgar; that is, than all men but themselves, and a few others, whom by fame, or for concurring with themselves, they approve. For such is the nature of men, that howsoever they may acknowledge many others to be more witty, or more eloquent, or more learned, yet they will hardly believe there be many so wise as themselves; for they see their own wit at hand, and other men's at a distance. But this proveth rather that men are in that point equal, than unequal. For there is not ordinarily a greater sign of the

equal distribution of anything, than that every man is contented with his share.

From this equality of ability, ariseth equality of hope in the attaining of our ends. And therefore if any two men desire the same thing, which nevertheless they cannot both enjoy, they become enemies; and in the way to their end, which is principally their own conservation, and sometimes their delectation only, endeavor to destroy, or subdue one another. And from hence it comes to pass that where an invader hath no more to fear than another man's single power; if one plant, sow, build, or possess a convenient seat, others may probably be expected to come prepared with forces united, to dispossess and deprive him, not only of the fruit of his labor, but also of his life or liberty. And the invader again is in the like danger of another.

And from this diffidence of one another, there is no way for any man to secure himself so reasonable as anticipation; that is, by force or wiles to master the persons of all men he can, so long, till he see no other power great enough to endanger him: and this is no more than his own conservation requireth, and is generally allowed. Also because there be some, that taking pleasure in contemplating their own power in the acts of conquest, which they pursue farther than their security requires; if others, that otherwise would be glad to be at ease within modest bounds, should not by invasion increase their power, they would not be able long time, by standing only on their defence, to subsist. And by consequence, such augmentation of dominion over men being necessary to a man's conservation, it ought to be allowed him.

Again, men have no pleasure, but on the contrary a great deal of grief, in keeping company, where there is no power able to overawe them all. For every man looketh that his companion should value him at the same rate he sets upon himself; and upon all signs of contempt, or undervaluing, naturally endeavors, as far as he dares (which amongst them that have no common power to keep them in quiet, is far enough to make them destroy each other), to extort a greater

value from his contemners by damage, and from others by the example.

So that in the nature of man, we find three principal causes of quarrel. First, competition; second, diffidence; thirdly, glory.

The first maketh men invade for gain; the second, for safety; and the third, for reputation. The first use violence to make themselves masters of other men's persons, wives, children, and cattle; the second, to defend them; the third, for trifles, as a word, a smile, a different opinion, and any other sign of undervalue, either direct in their persons, or by reflection in their kindred, their friends, their nation, their profession, or their name.

Hereby it is manifest that during the time men live without a common power to keep them all in awe, they are in that condition which is called war; and such a war as is of every man against every man. For *war* consisteth not in battle only, or the act of fighting, but in a tract of time wherein the will to contend by battle is sufficiently known, and therefore the notion of *time* is to be considered in the nature of war, as it is in the nature of weather. For as the nature of foul weather lieth not in a shower or two of rain, but in an inclination thereto of many days together; so the nature of war consisteth not in actual fighting, but in the known disposition thereto, during all the time there is no assurance to the contrary. All other time is *peace.*

Whatsoever therefore is consequent to a time of war, where every man is enemy to every man; the same is consequent to the time, wherein men live without other security than what their own strength and their own invention shall furnish them withal. In such condition there is no place for industry, because the fruit thereof is uncertain: and consequently no culture of the earth; no navigation, nor use of the commodities that may be imported by sea; no commodious building; no instruments of moving, and removing, such things as require much force; no knowledge of the face of the earth; no account of time; no arts; no letters; no society; and which is worst

of all, continual fear, and danger of violent death; and the life of man, solitary, poor, nasty, brutish, and short.

It may seem strange to some man that has not well weighed these things, that nature should thus dissociate, and render men apt to invade and destroy one another; and he may therefore, not trusting to this inference, made from the passions, desire perhaps to have the same confirmed by experience. Let him therefore consider with himself, when taking a journey, he arms himself and seeks to go well accompanied; when going to sleep, he locks his doors; when even in his house he locks his chests; and this when he knows there be laws, and public officers, armed, to revenge all injuries shall be done him: what opinion he has of his fellow-subjects, when he rides armed; of his fellow citizens, when he locks his doors; and of his children, and servants, when he locks his chests. Does he not there as much accuse mankind by his actions, as I do by my words? But neither of us accuse man's nature in it. The desires, and other passions of man, are in themselves no sin. No more are the actions that proceed from those passions, till they know a law that forbids them: which till laws be made they cannot know; nor can any law be made, till they have agreed upon the person that shall make it.

It may peradventure be thought, there was never such a time nor condition of war as this; and I believe it was never generally so, over all the world: but there are many places where they live so now. For the savage people in many places of America, except the government of small families, the concord whereof dependeth on natural lust, have no government at all; and live at this day in that brutish manner, as I said before. Howsoever, it may be perceived what manner of life there would be, where there were no common power to fear; by the manner of life which men that have formerly lived under a peaceful government, use to degenerate into in a civil war.

But though there had never been any time wherein particular men were in a condition of war one against another; yet in all times, kings, and persons of sovereign authority, be-

cause of their independency, are in continual jealousies, and in the state and posture of gladiators; having their weapons pointing, and their eyes fixed on one another; that is, their forts, garrisons, and guns upon the frontiers of their kingdoms; and continual spies upon their neighbors; which is a posture of war. But because they uphold thereby the industry of their subjects, there does not follow from it that misery which accompanies the liberty of particular men.

To this war of every man against every man, this also is consequent: *that nothing can be unjust.* The notions of right and wrong, justice and injustice, have there no place. Where there is no common power, there is no law; where no law, no injustice. Force and fraud are in war the two cardinal virtues. Justice and injustice are none of the faculties neither of the body nor mind. If they were, they might be in a man that were alone in the world, as well as his senses and passions. They are qualities that relate to men in society, not in solitude. It is consequent also to the same condition, that there be no propriety, no dominion, no *mine* and *thine* distinct; but only that to be every man's, that he can get; and for so long as he can keep it. And thus much for the ill condition which man by mere nature is actually placed in; though with a possibility to come out of it, consisting partly in the passions, partly in his reason.

The passions that incline men to peace are fear of death, desire of such things as are necessary to commodious living, and a hope by their industry to obtain them. And reason suggesteth convenient articles of peace, upon which men may be drawn to agreement. These articles are they which otherwise are called the Laws of Nature; whereof I shall speak more particularly in the two following chapters.

CHAPTER XIV

OF THE FIRST AND SECOND NATURAL LAWS, AND OF CONTRACTS

THE RIGHT OF NATURE, which writers commonly call *jus naturale,* is the liberty each man hath to use his own power, as he will himself, for the preservation of his own nature; that is to say, of his own life; and consequently, of doing anything, which in his own judgment and reason, he shall conceive to be the aptest means thereunto.

By *liberty,* is understood, according to the proper signification of the word, the absence of external impediments: which impediments, may oft take away part of a man's power to do what he would; but cannot hinder him from using the power left him, according as his judgment, and reason shall dictate to him.

A *law of nature, lex naturalis,* is a precept or general rule, found out by reason, by which a man is forbidden to do that which is destructive of his life, or taketh away the means of preserving the same; and to omit that by which he thinketh it may be best preserved. For though they that speak of this subject, use to confound *jus* and *lex, right* and *law;* yet they ought to be distinguished: because *right* consisteth in liberty to do or to forbear, whereas *law* determineth and bindeth to one of them; so that law, and right differ as much as obligation and liberty; which in one and the same matter are inconsistent.

And because the condition of man, as hath been declared in the precedent chapter, is a condition of war of everyone against everyone; in which case everyone is governed by his own reason, and there is nothing he can make use of that may not be a help unto him in preserving his life against his enemies: it followeth, that in such a condition every man has a right to everything; even to one another's body. And therefore, as long as this natural right of every man to everything

endureth, there can be no security to any man, how strong or wise soever he be, of living out the time which nature ordinarily alloweth men to live. And consequently it is a precept, or general rule of reason, *that every man ought to endeavor peace, as far as he has hope of obtaining it; and when he cannot obtain it, that he may seek and use all helps and advantages of war.* The first branch of which rule containeth the first and fundamental law of nature; which is, *to seek peace and follow it.* The second, the sum of the right of nature; which is, *by all means we can, to defend ourselves.*

From this fundamental law of nature, by which men are commanded to endeavor peace, is derived this second law: *that a man be willing, when others are so too, as far forth as for peace and defence of himself he shall think it necessary, to lay down this right to all things; and be contented with so much liberty against other men, as he would allow other men against himself.* For as long as every man holdeth this right, of doing anything he liketh, so long are all men in the condition of war. But if other men will not lay down their right, as well as he, then there is no reason for anyone to divest himself of his: for that were to expose himself to prey, which no man is bound to, rather than to dispose himself to peace. This is that law of the Gospel: *whatsoever you require that others should do to you, that do ye to them.* And that law of all men, *quod tibi fieri non vis, alteri ne feceris.*

To *lay down* a man's *right* to any thing, is to *divest* himself of the *liberty,* of hindering another of the benefit of his own right to the same. For he that renounceth or passeth away his right, giveth not to any other man a right which he had not before; because there is nothing to which every man had not right by nature: but only standeth out of his way, that he may enjoy his own original right, without hindrance from him, not without hindrance from another. So that the effect which redoundeth to one man, by another man's defect of right, is but so much diminution of impediments to the use of his own right original.

Right is laid aside, either by simply renouncing it, or by

transferring it to another. By *simply renouncing,* when he cares not to whom the benefit thereof redoundeth. By *transferring,* when he intendeth the benefit thereof to some certain person or persons. And when a man hath in either manner abandoned or granted away his right; then is he said to be *obliged,* or bound, not to hinder those to whom such right is granted or abandoned, from the benefit of it; and that he *ought,* and it is his *duty,* not to make void that voluntary act of his own; and that such hindrance is *injustice,* and *injury,* as being *sine jure;* the right being before renounced, or transferred. So that injury, or injustice, in the controversies of the world, is somewhat like to that, which in the disputations of scholars is called *absurdity.* For as it is there called an absurdity to contradict what one maintained in the beginning; so in the world, it is called injustice, and injury, voluntarily to undo that which from the beginning he had voluntarily done. The way by which a man either simply renounceth, or transferreth his right, is a declaration, or signification, by some voluntary and sufficient sign or signs, that he doth so renounce or transfer, or hath so renounced or transferred the same, to him that accepteth it. And these signs are either words only, or actions only, or, as it happeneth most often, both words and actions. And the same are the *bonds,* by which men are bound and obliged—bonds that have their strength, not from their own nature, for nothing is more easily broken than a man's word, but from fear of some evil consequence upon the rupture.

Whensoever a man transferreth his right, or renounceth it; it is either in consideration of some right reciprocally transferred to himself, or for some other good he hopeth for thereby. For it is a voluntary act; and of the voluntary acts of every man, the object is some *good to himself.* And therefor there be some rights which no man can be understood by any words, or other signs, to have abandoned or transferred. As first a man cannot lay down the right of resisting them that assault him by force, to take away his life; because he cannot be understood to aim thereby, at any good to himself.

The same may be said of wounds, and chains, and imprisonment: both because there is no benefit consequent to such patience, as there is to the patience of suffering another to be wounded or imprisoned; as also because a man cannot tell, when he seeth men proceed against him by violence, whether they intend his death or not. And lastly the motive, an end for which this renouncing and transferring of right is introduced, is nothing else but the security of a man's person, in his life, and in the means of so preserving life as not to be weary of it. And therefore if a man by words, or other signs, seem to despoil himself of the end for which those signs were intended, he is not to be understood as if he meant it, or that it was his will, but that he was ignorant of how such words and actions were to be interpreted.

The mutual transferring of right, is that which men call *contract.*

There is difference between transferring of right to the thing, and transferring, or tradition—that is delivery—of the thing itself. For the thing may be delivered together with the translation of the right, as in buying and selling with ready money, or exchange of goods, or lands; and it may be delivered some time after.

Again, one of the contractors may deliver the thing contracted for on his part, and leave the other to perform his part at some determinate time after, and in the mean time be trusted; and then the contract on his part is called *pact,* or *covenant:* or both parts may contract now to perform hereafter; in which cases, he that is to perform in time to come, being trusted, his performance is called *keeping of promise,* or faith; and the failing of performance, if it be voluntary, *violation of faith.* . . .

[The remainder of this chapter treats of the conditions under which a covenant is established and those which render it invalid.]

CHAPTER XV

OF OTHER LAWS OF NATURE

FROM that law of nature by which we are obliged to transfer to another such rights as, being retained, hinder the peace of mankind, there followeth a third; which is this, *that men perform their covenants made:* without which, covenants are in vain, and but empty words; and the right of all men to all things remaining, we are still in the condition of war.

And in this law of nature, consisteth the fountain and original of *justice.* For where no covenant hath preceded, there hath no right been transferred, and every man has right to everything; and consequently, no action can be unjust. But when a covenant is made, then to break it is *unjust;* and the definition of *injustice* is no other than *the not performance of covenant.* And whatsoever is not unjust, is *just.*

But because covenants of mutual trust, where there is a fear of not performance on either part, as hath been said in the former chapter, are invalid; though the original of justice be the making of covenants; yet injustice actually there can be none, till the cause of such fear be taken away; which while men are in the natural condition of war, cannot be done. Therefore before the names of just and unjust can have place, there must be some coercive power, to compel men equally to the performance of their covenants, by the terror of some punishment greater than the benefit they expect by the breach of their covenant; and to make good that propriety which by mutual contract men acquire, in recompense of the universal right they abandon: and such power there is none before the erection of a commonwealth. And this is also to be gathered out of the ordinary definition of justice in the Schools; for they say, that *justice is the constant will of giving to every man his own.* And therefore where there is no *own,* that is no propriety, there is no injustice; and where is no coercive power erected, that is, where there is no commonwealth, there

is no propriety; all men having right to all things: therefore where there is no commonwealth, there nothing is unjust. So that the nature of justice consisteth in keeping of valid covenants; but the validity of covenants begins not but with the constitution of a civil power sufficient to compel men to keep them, and then it is also that propriety begins. . . .

As justice dependeth on antecedent covenant, so does *gratitude* depend on antecedent grace—that is to say, antecedent free gift—and is the fourth law of nature; which may be conceived in this form, *that a man which receiveth benefit from another of mere grace, endeavor that he which giveth it, have no reasonable cause to repent him of his good will.* For no man giveth but with intention of good to himself; because gift is voluntary; and of all voluntary acts, the object is to every man his own good; of which if men see they shall be frustrated, there will be no beginning of benevolence or trust, nor consequently of mutual help, nor of reconciliation of one man to another; and therefore they are to remain still in the condition of *war;* which is contrary to the first and fundamental law of nature, which commandeth men to *seek peace.* The breach of this law is called *ingratitude,* and hath the same relation to grace that injustice hath to obligation by covenant.

A fifth law of nature is *complaisance;* that is to say, *that every man strive to accommodate himself to the rest.* For the understanding whereof, we may consider that there is in men's aptness to society, a diversity of nature, rising from their diversity of affections; not unlike to that we see in stones brought together for building of an edifice. For as that stone which, by the asperity and irregularity of figure, takes more room from others than itself fills, and for the hardness cannot be easily made plain, and thereby hindereth the building, is by the builders cast away as unprofitable and troublesome: so also, a man that by asperity of nature will strive to retain those things which to himself are superfluous and to others necessary, and for the stubbornness of his passions cannot be corrected, is to be left, or cast out of society,

as cumbersome thereunto. For seeing every man, not only by right but also by necessity of nature, is supposed to endeavor all he can to obtain that which is necessary for his conservation; he that shall oppose himself against it, for things superfluous, is guilty of the war that thereupon is to follow; and therefore doth that which is contrary to the fundamental law of nature, which commandeth to seek peace. The observers of this law may be called *sociable;* the Latins call them *commodi;* the contrary, stubborn, insociable, froward, intractable.

A sixth law of nature is this, *that upon caution of the future time, a man ought to pardon the offences past of them that repenting, desire it.* For *pardon* is nothing but granting of peace; which though granted to them that persevere in their hostility, be not peace, but fear; yet not granted to them that give caution of the future time, is sign of an aversion to peace; and therefore contrary to the law of nature.

A seventh is, *that in revenges*—that is, retribution of evil for evil—*men look not at the greatness of the evil past, but the greatness of the good to follow.* Whereby we are forbidden to inflict punishment with any other design than for correction of the offender or direction of others. For this law is consequent to the next before it, that commandeth pardon upon security of the future time. Besides, revenge without respect to the example, and profit to come, is a triumph or glorying in the hurt of another, tending to no end; for the end is always somewhat to come, and glorying to no end is vain-glory and contrary to reason, and to hurt without reason tendeth to the introduction of war; which is against the law of nature, and is commonly styled by the name of *cruelty.*

And because all signs of hatred or contempt provoke to fight, insomuch as most men choose rather to hazard their life than not to be revenged, we may in the eighth place, for a law of nature, set down this precept, *that no man by deed, word, countenance, or gesture, declare hatred or contempt of another.* The breach of which law is commonly called *contumely.*

The question who is the better man, has no place in the condition of mere nature; where, as has been shewn before, all men are equal. The inequality that now is, has been introduced by the laws civil. I know that Aristotle in the first book of his *Politics,* for a foundation of his doctrine, maketh men by nature, some more worthy to command, meaning the wiser sort, such as he thought himself to be for his philosophy; others to serve, meaning those that had strong bodies, but were not philosophers as he: as if master and servant were not introduced by consent of men, but by difference of wit; which is not only against reason, but also against experience. For there are very few so foolish, that had not rather govern themselves than be governed by others; nor when the wise in their own conceit contend by force with them who distrust their own wisdom, do they always, or often, or almost at any time, get the victory. If nature therefore have made men equal, that equality is to be acknowledged; or if nature have made men unequal: yet because men that think themselves equal, will not enter into conditions of peace, but upon equal terms, such equality must be admitted. And therefore for the ninth law of nature, I put this, *that every man acknowledge another for his equal by nature.* The breach of this precept is *pride.*

On this law dependeth another, *that at the entrance into conditions of peace, no man require to reserve to himself any right which he is not content should be reserved to everyone of the rest.* As it is necessary for all men that seek peace, to lay down certain rights of nature; that is to say, not to have liberty to do all they list; so is it necessary for man's life, to retain some; as right to govern their own bodies; enjoy air, water, motion, ways to go from place to place; and all things else without which a man cannot live, or not live well. If in this case, at the making of peace, men require for themselves, that which they would not have to be granted to others, they do contrary to the precedent law, that commandeth the acknowledgment of natural equality, and therefore also against the law of nature. The observers of this law, are those we

call *modest,* and the breakers *arrogant* men. The Greeks call the violation of this law πλεονεξία; that is, a desire of more than their share.

Also if a man be trusted to judge between man and man, it is a precept of the law of nature, *that he deal equally between them.* For without that, the controversies of men cannot be determined but by war. He therefore that is partial in judgment, doth what in him lies, to deter men from the use of judges and arbitrators, and consequently against the fundamental law of nature, is the cause of war.

The observance of this law, from the equal distribution to each man, of that which in reason belongeth to him, is called *equity,* and, as I have said before, distributive justice; the violation, *acception of persons,* προσωπολημψία.

And from this followeth another law, *that such things as cannot be divided, be enjoyed in common, if it can be; and if the quantity of the thing permit, without stint; otherwise proportionably to the number of them that have right.* For otherwise the distribution is unequal, and contrary to equity.

But some things there be, that can neither be divided, nor enjoyed in common. Then, the law of nature, which prescribeth equity, requireth *that the entire right, or else, making the use alternate, the first possession, be determined by lot.* For equal distribution is of the law of nature, and other means of equal distribution cannot be imagined.

Of *lots* there be two sorts, *arbitrary* and *natural.* Arbitrary is that which is agreed on by the competitors; natural is either *primogeniture,* which the Greek calls κληρονομία, which signifies, given by lot; or *first seizure.*

And therefore those things which cannot be enjoyed in common, nor divided, ought to be adjudged to the first possessor; and in some cases to the first born, as acquired by lot.

It is also a law of nature, *that all men that mediate peace, be allowed safe conduct.* For the law that commandeth peace, as the *end,* commandeth intercession, as the *means;* and to intercession the means is safe conduct.

And because, though men be never so willing to observe these laws, there may nevertheless arise questions concerning a man's action; first, whether it were done, or not done; secondly, if done, whether against the law, or not against the law; the former whereof is called a question of *fact,* the latter a question of *right:* therefore unless the parties to the question covenant mutually to stand to the sentence of another, they are as far from peace as ever. This other to whose sentence they submit is called an *arbitrator.* And therefore it is of the law of nature, *that they that are at controversy, submit their right to the judgment of an arbitrator.*

And seeing every man is presumed to do all things in order to his own benefit, no man is a fit arbitrator in his own cause; and if he were never so fit, yet equity allowing to each party equal benefit, if one be admitted to be judge, the other is to be admitted also; and so the controversy, that is, the cause of war, remains, against the law of nature.

For the same reason no man in any cause ought to be received for arbitrator, to whom greater profit or honor or pleasure apparently ariseth out of the victory of one party than of the other: for he hath taken, though an unavoidable bribe, yet a bribe; and no man can be obliged to trust him. And thus also the controversy and the condition of war remaineth, contrary to the law of nature.

And in a controversy of *fact,* the judge being to give more credit to one than to the other, if there be no other arguments must give credit to a third, or to a third and fourth, or more: for else the question is undecided, and left to force, contrary to the law of nature.

These are the laws of nature, dictating peace, for a means of the conservation of men in multitudes; and which only concern the doctrine of civil society. There be other things tending to the destruction of particular men; as drunkenness, and all other parts of intemperance; which may therefore also be reckoned amongst those things which the law of nature hath forbidden; but are not necessary to be mentioned, nor are pertinent enough to this place.

And though this may seem too subtle a deduction of the laws of nature, to be taken notice of by all men; whereof the most part are too busy in getting food, and the rest too negligent to understand; yet to leave all men inexcusable, they have been contracted into one easy sum, intelligible even to the meanest capacity; and that is, *Do not that to another, which thou wouldst not have done to thyself;* which sheweth him that he has no more to do in learning the laws of nature, but, when weighing the actions of other men with his own, they seem too heavy, to put them into the other part of the balance, and his own into their place, that his own passions, and self-love, may add nothing to the weight; and then there is none of these laws of nature that will not appear unto him very reasonable.

The laws of nature oblige *in foro interno;* that is to say, they bind to a desire they should take place: but *in foro externo,* that is, to the putting them in act, not always. For he that should be modest, and tractable, and perform all he promises, in such time and place where no man else should do so, should but make himself a prey to others, and procure his own certain ruin, contrary to the ground of all laws of nature, which tend to nature's preservation. And again, he that having sufficient security that others shall observe the same laws towards him, observes them not himself, seeketh not peace but war, and consequently the destruction of his nature by violence.

And whatsoever laws bind *in foro interno,* may be broken, not only by a fact contrary to the law, but also by a fact according to it, in case a man think it contrary. For though his action in this case be according to the law, yet his purpose was against the law; which, where the obligation is *in foro interno,* is a breach.

The laws of nature are immutable and eternal; for injustice, ingratitude, arrogance, pride, iniquity, acception of persons, and the rest, can never be made lawful. For it can never be that war shall preserve life, and peace destroy it.

The same laws, because they oblige only to a desire, and

endeavor, I mean an unfeigned and constant endeavor, are easy to be observed. For in that they require nothing but endeavor, he that endeavoreth their performance fulfilleth them, and he that fulfilleth the law is just.

And the science of them is the true and only moral philosophy. For moral philosophy is nothing else but the science of what is good and evil, in the conversation and society of mankind. *Good* and *evil* are names that signify our appetites and aversions; which in different tempers, customs, and doctrines of men, are different: and divers men differ not only in their judgment on the senses of what is pleasant and unpleasant to the taste, smell, hearing, touch, and sight; but also of what is conformable or disagreeable to reason, in the actions of common life. Nay, the same man, in divers times, differs from himself; and one time praiseth, that is, calleth good, what another time he dispraiseth, and calleth evil: from whence arise disputes, controversies, and at last war. And therefore so long as a man is in the condition of mere nature, which is a condition of war, his private appetite is the measure of good and evil: and consequently all men agree on this, that peace is good, and therefore also the way, or means of peace, which, as I have shewed before, are justice, gratitude, modesty, equity, mercy, and the rest of the laws of nature, are good; that is to say, *moral virtues;* and their contrary *vices,* evil. Now the science of virtue and vice is moral philosophy; and therefore the true doctrine of the laws of nature, is the true moral philosophy. But the writers of moral philosophy, though they acknowledge the same virtues and vices; yet not seeing wherein consisted their goodness, nor that they come to be praised as the means of peaceable, sociable, and comfortable living, place them in a mediocrity of passions: as if not the cause, but the degree of daring, made fortitude; or not the cause, but the quantity of a gift, made liberality.

These dictates of reason, men used to call by the name of laws, but improperly: for they are but conclusions, or theorems, concerning what conduceth to the conservation and defence of themselves; whereas law, properly, is the word of

him that by right hath command over others. But yet if we consider the same theorems as delivered in the word of God, that by right commandeth all things, then are they properly called laws. . . .

[In Chapter XVI, "Of Persons, Authors, and Things Personated," Hobbes distinguishes a *natural* from a *feigned* or *artificial* person. One man, or an assembly of men, may represent an artificial person. Thus we are enabled to understand the unity and personality of the sovereign as represented in one or more men: "A multitude of men are made one person, when they are by one man, or one person, represented; so that it be done with the consent of every one of that multitude in particular. For it is the unity of the representer, not the unity of the represented, that maketh the person one. And it is the representer that beareth the person, and but one person; and unity cannot otherwise be understood in multitude."]

PART II: OF COMMONWEALTH

CHAPTER XVII

OF THE CAUSES, GENERATION, AND DEFINITION OF A COMMONWEALTH

THE final cause, end, or design of men who naturally love liberty and dominion over others, in the introduction of that restraint upon themselves in which we see them live in commonwealths, is the foresight of their own preservation, and of a more contented life thereby; that is to say, of getting themselves out from that miserable condition of war, which is necessarily consequent, as hath been shown in Chapter XIII, to the natural passions of men, when there is no visible power to keep them in awe, and tie them by fear of punishment to the performance of their covenants and observation of those laws of nature set down in the fourteenth and fifteenth chapters.

For the laws of nature, as justice, equity, modesty, mercy, and, in sum, *doing to others as we would be done to,* of themselves, without the terror of some power to cause them to be observed, are contrary to our natural passions, that carry us to partiality, pride, revenge, and the like. And covenants, without the sword, are but words, and of no strength to secure a man at all. Therefore notwithstanding the laws of nature, which everyone hath then kept, when he has the will to keep them when he can do it safely; if there be no power erected, or not great enough for our security, every man will, and may, lawfully rely on his own strength and art, for caution against all other men. And in all places where men have lived by small families, to rob and spoil one another has been a trade, and so far from being reputed against the law of nature, that the greater spoils they gained, the greater was their honor; and men observed no other laws therein but the laws of honor; that is, to abstain from cruelty, leaving to men their lives, and instruments of husbandry. And as small families did then; so now do cities and kingdoms, which are but greater families, for their own security enlarge their dominions, upon all pretences of danger and fear of invasion, or assistance that may be given to invaders, and endeavor as much as they can to subdue or weaken their neighbors, by open force and secret arts, for want of other caution, justly; and are remembered for it in after ages with honor.

Nor is it the joining together of a small number of men, that gives them this security; because in small numbers, small additions on the one side or the other make the advantage of strength so great, as is sufficient to carry the victory, and therefore gives encouragement to an invasion. The multitude sufficient to confide in for our security, is not determined by any certain number, but by comparison with the enemy we fear; and is then sufficient, when the odds of the enemy is not of so visible and conspicuous moment, to determine the event of war, as to move him to attempt.

And be there never so great a multitude, yet if their actions

be directed according to their particular judgments and particular appetites, they can expect thereby no defence nor protection, neither against a common enemy nor against the injuries of one another. For being distracted in opinions concerning the best use and application of their strength, they do not help but hinder one another; and reduce their strength by mutual opposition to nothing: whereby they are easily, not only subdued by a very few that agree together; but also when there is no common enemy, they make war upon each other, for their particular interests. For if we could suppose a great multitude of men to consent in the observation of justice, and other laws of nature, without a common power to keep them all in awe, we might as well suppose all mankind to do the same; and then there neither would be, nor need to be any civil government or commonwealth at all, because there would be peace without subjection.

Nor is it enough for the security, which men desire should last all the time of their life, that they be governed and directed by one judgment for a limited time, as in one battle or one war. For though they obtain a victory by their unanimous endeavor against a foreign enemy; yet afterwards, when either they have no common enemy, or he that by one part is held for an enemy, is by another part held for a friend, they must needs by the difference of their interests dissolve, and fall again into a war amongst themselves.

It is true that certain living creatures, as bees and ants, live sociably one with another, which are therefore by Aristotle numbered amongst political creatures; and yet have no other direction than their particular judgments and appetites; nor speech, whereby one of them can signify to another what he thinks expedient for the common benefit: and therefore some man may perhaps desire to know why mankind cannot do the same. To which I answer:

First, that men are continually in competition for honor and dignity, which these creatures are not; and consequently amongst men there ariseth on that ground, envy and hatred, and finally war; but amongst these not so.

Secondly, that amongst these creatures, the common good differeth not from the private; and being by nature inclined to their private, they procure thereby the common benefit. But man, whose joy consisteth in comparing himself with other men, can relish nothing but what is eminent.

Thirdly, that these creatures, having not, as man, the use of reason, do not see, nor think they see, any fault in the administration of their common business; whereas amongst men, there are very many that think themselves wiser, and able to govern the public better, than the rest; and these strive to reform and innovate, one this way, another that way; and thereby bring it into distraction and civil war.

Fourthly, that these creatures, though they have some use of voice in making known to one another their desires and other affections; yet they want that art of words by which some men can represent to others, that which is good in the likeness of evil, and evil in the likeness of good, and augment or diminish the apparent greatness of good and evil; discontenting men and troubling their peace at their pleasure.

Fifthly, irrational creatures cannot distinguish between *injury* and *damage;* and therefore as long as they be at ease, they are not offended with their fellows: whereas man is then most troublesome when he is most at ease; for then it is that he loves to shew his wisdom, and control the actions of them that govern the commonwealth.

Lastly, the agreement of these creatures is natural; that of men is by covenant only, which is artificial: and therefore it is no wonder if there be somewhat else required, besides covenant, to make their agreement constant and lasting; which is a common power, to keep them in awe, and to direct their actions to the common benefit.

The only way to erect such a common power, as may be able to defend them from the invasion of foreigners and the injuries of one another, and thereby to secure them in such sort as that, by their own industry, and by the fruits of the earth, they may nourish themselves and live contentedly; is,

to confer all their power and strength upon one man, or upon one assembly of men, that may reduce all their wills, by plurality of voices, unto one will: which is as much as to say, to appoint one man, or assembly of men, to bear their person; and everyone to own and acknowledge himself to be author of whatsoever he that so beareth their person, shall act or cause to be acted in those things which concern the common peace and safety; and therein to submit their wills, everyone to his will, and their judgments, to his judgment. This is more than consent, or concord; it is a real unity of them all, in one and the same person, made by covenant of every man with every man, in such manner as if every man should say to every man, *"I authorize and give up my right of governing myself to this man, or to this assembly of men, on this condition, that thou give up thy right to him, and authorize all his actions in like manner."* This done, the multitude so united in one person, is called a *commonwealth,* in Latin *civitas.* This is the generation of that great LEVIATHAN, or rather, to speak more reverently, of that *mortal god,* to which we owe under the *immortal God,* our peace and defence. For by this authority, given him by every particular man in the commonwealth, he hath the use of so much power and strength conferred on him, that by terror thereof he is enabled to perform the wills of them all, to peace at home and mutual aid against their enemies abroad. And in him consisteth the essence of the commonwealth; which, to define it, is *one person, of whose acts a great multitude, by mutual covenants one with another, have made themselves every one the author, to the end he may use the strength and means of them all, as he shall think expedient, for their peace and common defence.*

And he that carrieth this person, is called *sovereign,* and said to have sovereign power; and everyone besides, his *subject.*

The attaining to this sovereign power is by two ways. One, by natural force; as when a man maketh his children to submit themselves and their children to his government, as

being able to destroy them if they refuse; or by war subdueth his enemies to his will, giving them their lives on that condition. The other, is when men agree amongst themselves to submit to some man, or assembly of men, voluntarily, on confidence to be protected by him against all others. This latter, may be called a political commonwealth, or commonwealth by *institution;* and the former, a commonwealth by *acquisition.* And first, I shall speak of a commonwealth by institution.

CHAPTER XVIII

OF THE RIGHTS OF SOVEREIGNS BY INSTITUTION

A COMMONWEALTH is said to be *instituted,* when a multitude of men do agree and covenant, everyone with everyone, that to whatsoever man, or assembly of men, shall be given by the major part the right to present the person of them all, that is to say, to be their *representative;* everyone, as well he that voted for it as he that voted against it, shall authorize all the actions and judgments of that man, or assembly of men, in the same manner as if they were his own, to the end to live peaceably amongst themselves and be protected against other men.

From this institution of a commonwealth are derived all the *rights* and *faculties* of him, or them, on whom sovereign power is conferred by the consent of the people assembled.

First, because they covenant, it is to be understood they are not obliged by former covenant to anything repugnant hereunto. And consequently they that have already instituted a commonwealth, being thereby bound by covenant to own the actions and judgments of one, cannot lawfully make a new covenant amongst themselves, to be obedient to any other, in anything whatsoever, without his permission. And therefore, they that are subject to a monarch, cannot without his leave cast off monarchy, and return to the confusion of a

disunited multitude; nor transfer their person from him that beareth it, to another man, or other assembly of men: for they are bound, every man to every man, to own, and be reputed author of all, that he that already is their sovereign shall do and judge fit to be done; so that any one man dissenting, all the rest should break their covenant made to that man, which is injustice: and they have also every man given the sovereignty to him that beareth their person; and therefore if they depose him, they take from him that which is his own, and so again it is injustice. Besides, if he that attempteth to depose his sovereign, be killed or punished by him for such attempt, he is author of his own punishment, as being by the institution, author of all his sovereign shall do; and because it is injustice for a man to do anything for which he may be punished by his own authority, he is also upon that title, unjust. And whereas some men have pretended for their disobedience to their sovereign, a new covenant, made not with men but with God, this also is unjust: for there is no covenant with God, but by mediation of somebody that representeth God's person; which none doth but God's lieutenant, who hath the sovereignty under God. But this pretence of covenant with God, is so evident a lie, even in the pretenders' own consciences, that it is not only an act of an unjust, but also of a vile and unmanly disposition.

Secondly, because the right of bearing the person of them all, is given to him they make sovereign, by covenant only of one to another, and not of him to any of them; there can happen no breach of covenant on the part of the sovereign; and consequently none of his subjects, by any pretence of forfeiture, can be freed from his subjection. That he which is made sovereign maketh no covenant with his subjects beforehand, is manifest; because either he must make it with the whole multitude, as one party to the covenant, or he must make a several covenant with every man. With the whole, as one party, it is impossible, because as yet they are not one person: and if he make so many several covenants as there be men, those covenants after he hath the sovereignty are

void; because what act soever can be pretended by any one of them for breach thereof, is the act both of himself and of all the rest, because done in the person, and by the right of every one of them in particular. Besides, if any one, or more of them, pretend a breach of the covenant made by the sovereign at his institution; and others, or one other of his subjects, or himself alone, pretend there was no such breach: there is in this case, no judge to decide the controversy; it returns therefore to the sword again; and every man recovereth the right of protecting himself by his own strength, contrary to the design they had in the institution. It is therefore in vain to grant sovereignty by way of precedent covenant. The opinion that any monarch receiveth his power by covenant, that is to say, on condition, proceedeth from want of understanding this easy truth, that covenants being but words and breath, have no force to oblige, contain, constrain, or protect any man, but what it has from the public sword; that is, from the untied hands of that man, or assembly of men that hath the sovereignty, and whose actions are avouched by them all, and performed by the strength of them all, in him united. But when an assembly of men is made sovereign, then no man imagineth any such covenant to have passed in the institution; for no man is so dull as to say, for example, the people of Rome made a covenant with the Romans, to hold the sovereignty on such or such conditions; which not performed, the Romans might lawfully depose the Roman people. That men see not the reason to be alike in a monarchy and in a popular government, proceedeth from the ambition of some that are kinder to the government of an assembly, whereof they may hope to participate, than of monarchy, which they despair to enjoy.

Thirdly, because the major part hath by consenting voices declared a sovereign, he that dissented must now consent with the rest; that is, be contented to avow all the actions he shall do, or else justly be destroyed by the rest. For if he voluntarily entered into the congregation of them that were assembled, he sufficiently declared thereby his will, and there-

fore tacitly covenanted to stand to what the major part should ordain; and therefore if he refuse to stand thereto, or make protestation against any of their decrees, he does contrary to his covenant, and therefore unjustly. And whether he be of the congregation or not, and whether his consent be asked or not, he must either submit to their decrees, or be left in the condition of war he was in before; wherein he might without injustice be destroyed by any man whatsoever.

Fourthly, because every subject is by this institution author of all the actions and judgments of the sovereign instituted; it follows that whatsoever he doth, it can be no injury to any of his subjects, nor ought he to be by any of them accused of injustice. For he that doth anything by authority from another, doth therein no injury to him by whose authority he acteth: but by this institution of a commonwealth, every particular man is author of all the sovereign doth: and consequently he that complaineth of injury from his sovereign, complaineth of that whereof he himself is author; and therefore ought not to accuse any man but himself; no nor himself of injury, because to do injury to one's self, is impossible. It is true that they that have sovereign power may commit iniquity, but not injustice, or injury in the proper signification.

Fifthly, and consequently to that which was said last, no man that hath sovereign power can justly be put to death, or otherwise in any manner by his subjects punished. For seeing every subject is author of the actions of his sovereign, he punisheth another for the actions committed by himself.

And because the end of this institution, is the peace and defence of them all, and whosoever has right to the end has right to the means; it belongeth of right, to whatsoever man or assembly that hath the sovereignty, to be judge both of the means of peace and defence, and also of the hindrances and disturbances of the same; and to do whatsoever he shall think necessary to be done, both beforehand, for the preserving of peace and security, by prevention of discord at home and hostility from abroad, and, when peace and security are lost, for the recovery of the same. And therefore,

Sixthly, it is annexed to the sovereignty, to be judge of what opinions and doctrines are averse, and what conducing to peace; and consequently, on what occasions, how far, and what men are to be trusted withal, in speaking to multitudes of people; and who shall examine the doctrines of all books before they be published. For the actions of men proceed from their opinions; and in the well-governing of opinions consisteth the well-governing of men's actions, in order to their peace and concord. And though in matter of doctrine nothing ought to be regarded but the truth, yet this is not repugnant to regulating the same by peace. For doctrine repugnant to peace can no more be true, than peace and concord can be against the law of nature. It is true that in a commonwealth, where, by the negligence or unskilfulness of governors and teachers, false doctrines are by time generally received; the contrary truths may be generally offensive. Yet the most sudden and rough bursting in of a new truth that can be, does never break the peace, but only sometimes awake the war. For those men that are so remissly governed, that they dare take up arms to defend or introduce an opinion, are still in war; and their condition not peace, but only a cessation of arms for fear of one another; and they live, as it were, in the precincts of battle continually. It belongeth therefore to him that hath the sovereign power, to be judge, or constitute all judges of opinions and doctrines, as a thing necessary to peace; thereby to prevent discord and civil war.

Seventhly, is annexed to the sovereignty, the whole power of prescribing the rules, whereby every man may know what goods he may enjoy, and what actions he may do, without being molested by any of his fellow-subjects; and this is it men call *propriety*. For before constitution of sovereign power, as hath already been shown, all men had right to all things; which necessarily causeth war: and therefore this propriety, being necessary to peace, and depending on sovereign power, is the act of that power, in order to the public peace. These rules of propriety, or *meum* and *tuum*, and of good, evil, lawful, and unlawful in the actions of subjects, are the civil

laws; that is to say, the laws of each commonwealth in particular: though the name of civil law be now restrained to the ancient civil laws of the city of Rome; which being the head of a great part of the world, her laws at that time were in these parts the civil law.

Eighthly, is annexed to the sovereignty, the right of judicature; that is to say, of hearing and deciding all controversies which may arise concerning law, either civil or natural, or concerning fact. For without the decision of controversies, there is no protection of one subject against the injuries of another: the laws concerning *meum* and *tuum* are in vain; and to every man remaineth, from the natural and necessary appetite of his own conservation, the right of protecting himself by his private strength, which is the condition of war, and contrary to the end for which every commonwealth is instituted.

Ninthly, is annexed to the sovereignty, the right of making war and peace with other nations and commonwealths; that is to say, of judging when it is for the public good, and how great forces are to be assembled, armed, and paid for that end; and to levy money upon the subjects, to defray the expenses thereof. For the power by which the people are to be defended, consisteth in their armies; and the strength of an army, in the union of their strength under one command: which command the sovereign instituted, therefore hath; because the command of the militia, without other institution, maketh him that hath it sovereign. And therefore whosoever is made general of an army, he that hath the sovereign power is always generalissimo.

Tenthly, is annexed to the sovereignty, the choosing of all counsellors, ministers, magistrates, and offices, both in peace and war. For seeing the sovereign is charged with the end, which is the common peace and defense, he is understood to have power to use such means as he shall think most fit for his discharge.

Eleventhly, to the sovereign is committed the power of rewarding with riches, or honor, and of punishing with cor-

poral or pecuniary punishment, or with ignominy, every subject according to the law he hath formerly made; or if there be no law made, according as he shall judge most to conduce to the encouraging of men to serve the commonwealth, or deterring of them from doing disservice to the same.

Lastly, considering what value men are naturally apt to set upon themselves, what respect they look for from others, and how little they value other men; from whence continually arise amongst them, emulation, quarrels, factions, and at last war, to the destroying of one another and diminution of their strength against a common enemy: it is necessary that there be laws of honor, and a public rate of the worth of such men as have deserved or are able to deserve well of the commonwealth; and that there be force in the hands of some or other, to put those laws in execution. But it hath already been shown, that not only the whole militia, or forces of the commonwealth, but also the judicature of all controversies, is annexed to the sovereignty. To the sovereign therefore it belongeth also to give titles of honor; and to appoint what order of place and dignity each man shall hold; and what signs of respect, in public or private meetings, they shall give to one another.

These are the rights which make the essence of sovereignty, and which are the marks whereby a man may discern in what man, or assembly of men, the sovereign power is placed and resideth. For these are incommunicable and inseparable. The power to coin money, to dispose of the estate and persons of infant heirs, to have preëmption in markets, and all other statute prerogatives, may be transferred by the sovereign; and yet the power to protect his subjects be retained. But if he transfer the militia, he retains the judicature in vain, for want of execution of the laws; or if he grant away the power of raising money, the militia is in vain; or if he give away the government of doctrines, men will be frighted into rebellion with the fear of spirits. And so if we consider any one of the said rights, we shall presently see that the holding of all the rest will produce no effect in the conserva-

tion of peace and justice, the end for which all commonwealths are instituted. And this division is it whereof it is said, *a kingdom divided in itself cannot stand:* for unless this division precede, division into opposite armies can never happen. If there had not first been an opinion received of the greatest part of England, that these powers were divided between the King and the Lords and the House of Commons, the people had never been divided and fallen into this civil war; first between those that disagreed in politics, and after between the dissenters about the liberty of religion: which have so instructed men in this point of sovereign right; and there be few now in England that do not see that these rights are inseparable, and will be so generally acknowledged at the next return of peace; and so continue till their miseries are forgotten; and no longer, except the vulgar be better taught than they have hitherto been.

And because they are essential and inseparable rights, it follows necessarily that in whatsoever words any of them seem to be granted away, yet if the sovereign power itself be not in direct terms renounced, and the name of sovereign no more given by the grantees to him that grants them, the grant is void: for when he has granted all he can, if we grant back the sovereignty, all is restored, as inseparably annexed thereunto.

This great authority being indivisible, and inseparably annexed to the sovereignty, there is little ground for the opinion of them that say of sovereign kings, though they be *singulis majores,* of greater power than every one of their subjects, yet they be *universis minores,* of less power than them all together. For if by 'all together' they mean not the collective body as one person, then 'all together' and 'every one' signify the same, and the speech is absurd. But if by 'all together' they understand them as one person, which person the sovereign bears, then the power of all together is the same with the sovereign's power, and so again the speech is absurd: which absurdity they see well enough when the sovereignty is in an assembly of the people, but in a monarch they see it

not; and yet the power of sovereignty is the same in whomsoever it be placed.

And as the power, so also the honor of the sovereign, ought to be greater than that of any or all the subjects. For in the sovereignty is the fountain of honor. The dignities of lord, earl, duke, and prince are his creatures. As in the presence of the master, the servants are equal and without any honor at all; so are the subjects, in the presence of the sovereign. And though they shine some more, some less, when they are out of his sight; yet in his presence, they shine no more than the stars in the presence of the sun.

But a man may here object that the condition of subjects is very miserable, as being obnoxious to the lusts, and other irregular passions, of him or them that have so unlimited a power in their hands. And commonly they that live under a monarch, think it the fault of monarchy; and they that live under the government of democracy, or other sovereign assembly, attribute all the inconvenience to that form of commonwealth; whereas the power in all forms, if they be perfect enough to protect them, is the same: not considering that the state of man can never be without some incommodity or other; and that the greatest that in any form of government can possibly happen to the people in general, is scarce sensible, in respect to the miseries and horrible calamities that accompany a civil war, or that dissolute condition of masterless men, without subjection to laws and a coercive power to tie their hands from rapine and revenge: nor considering that the greatest pressure of sovereign governors, proceedeth not from any delight or profit they can expect in the damage or weakening of their subjects, in whose vigor consisteth their own strength and glory; but in the restiveness of themselves, that unwillingly contributing to their own defence, make it necessary for their governors to draw from them what they can in time of peace, that they may have means on any emergent occasion or sudden need, to resist or take advantage on their enemies. For all men are by nature provided of notable multiplying glasses, that is their passions and self-love, through

which every little payment appeareth a great grievance; but are destitute of those prospective glasses, namely moral and civil science, to see afar off the miseries that hang over them, and cannot without such payment be avoided. . . .

[Chapters XIX, "Of the Several Kinds of Commonwealth by Institution, and of Succession to the Sovereign Power," and XX, "Of Dominion Paternal and Despotical," treat of the forms of representation and the modes of institution and perpetuation of the sovereignty. Hobbes accepts the traditional division of commonwealths into monarchies, aristocracies, and democracies. There can be no other forms of government because the sovereignty being indivisible it must be invested in either one man or an assembly of men or the whole people. The terms 'tyranny,' 'oligarchy' and 'anarchy' are not different forms but dyslogistic appelatives applied to these three forms by disaffected subjects. So-called 'mixed' governments are impossible. "For that were to erect two sovereigns; and every man to have his person represented by two actors, that by opposing one another, must needs divide that power which, if men will live in peace, is indivisible; and thereby reduce the multitude into the condition of war, contrary to the end for which all sovereignty is instituted." The difference between these three kinds of government "consisteth not in the difference of power, but in the difference of convenience, or aptitude to produce the peace and security of the people; for which end they were instituted." Hobbes proceeds now to compare monarchy with the other two. The most important superiority of monarchy is that while in the other forms the politician, since he is also a man, must always tend to place his own natural person or private interest before that of the public and thus pervert the ends of government, in monarchy "the private interest is the same with the public. The riches, power, and honor of a monarch arise only from the riches, strength, and reputation of his subjects. For no king can be rich, nor glorious, nor secure, whose subjects are either poor or contemptible, or too weak through want or dissension to maintain a war against their enemies; whereas in a democracy or aristocracy, the public prosperity confers not so much to the private fortune of one that is corrupt or ambitious, as doth many times a perfidious advice, a treacherous action, or a civil war." Moreover monarchy is more efficient in respect to the

taking of secret council and consistency of policy. The inconveniencies of monarchy are favoritism, and the contingency of "descent upon an infant or one that cannot discern between good and evil."

As to succession, there "is no perfect form of government where the disposing of the succession is not in the present sovereign"; otherwise there is intermittent relapse into the state of nature, "contrary to the intention of them that did institute the commonwealth, for their perpetual, and not temporary security." Therefore "it is manifest that by the institution of monarchy, the disposing of the successor is always left to the judgment and will of the present possessor." Sovereignty is instituted by contract and, while ordinarily transmitted by generation, may also be acquired by conquest. But in all governments, whatever their origin, the attributes of sovereignty are the same. "In sum, the rights and consequences of both *paternal* and *despotical* dominion, are the very same with those of a sovereign by institution, and for the same reasons; which reasons are set down in the precedent chapter. So that for a man that is monarch of divers nations, whereof he hath, in one the sovereignty by institution of the people assembled, and in another by conquest, that is by the submission of each particular, to avoid death or bonds; to demand of one nation more than of the other, from the title of conquest, as being a conquered nation, is an act of ignorance of the rights of sovereignty; for the sovereign is absolute over both alike, or else there is no sovereignty at all; and so every man may lawfully protect himself, if he can, with his own sword, which is the condition of war." Hobbes, after proceeding to corroborate his theory of sovereignty by citations from Scripture, concludes: "So that it appeareth plainly, to my understanding, both from reason and Scripture, that the sovereign power, whether placed in one man, as in monarchy, or in one assembly of men, as in popular and aristocratical commonwealths, is as great as possibly men can be imagined to make it. And though of so unlimited a power, men may fancy many evil consequences, yet the consequences of the want of it, which is perpetual war of every man against his neighbor, are much worse. The condition of man in this life shall never be without inconveniences; but there happeneth in no commonwealth any great inconvenience, but what proceeds from the subject's disobedience and breach of those covenants, from which

the commonwealth hath its being. And whosoever thinking sovereign power too great, will seek to make it less, must subject himself to the power that can limit it; that is to say, to a greater."]

CHAPTER XXI

OF THE LIBERTY OF SUBJECTS

LIBERTY, OR FREEDOM, signifieth, properly, the absence of opposition: by opposition, I mean external impediments of motion; and may be applied no less to irrational and inanimate creatures, than to rational. For whatsoever is so tied, or environed, as it cannot move but within a certain space, which space is determined by the opposition of some external body, we say it hath not liberty to go further. And so of all living creatures, whilst they are imprisoned or restrained, with walls or chains, and of the water whilst it is kept in by banks or vessels, that otherwise would spread itself into a larger space, we use to say, they are not at liberty to move in such manner, as without those external impediments they would. But when the impediment of motion is in the constitution of the thing itself, we use not to say it wants the liberty, but the *power* to move; as when a stone lieth still, or a man is fastened to his bed by sickness.

And according to this proper and generally received meaning of the word, *a 'freeman' is he that in those things which by his strength and wit he is able to do, is not hindered to do what he has a will to.* But when the words 'free' and 'liberty' are applied to anything but bodies, they are abused; for that which is not subject to motion is not subject to impediment: and therefore, when it is said, for example, the way is free, no liberty of the way is signified, but of those that walk in it without stop. And when we say a gift is free, there is not meant any liberty of the gift, but of the giver, that was not bound by any law or covenant to give it.

So when we 'speak freely,' it is not the liberty of voice or pronunciation, but of the man, whom no law hath obliged to speak otherwise than he did. Lastly, from the use of the word *free-will,* no liberty can be inferred of the will, desire, or inclination, but the liberty of the man; which consisteth in this, that he finds no stop, in doing what he has the will, desire, or inclination to do.

Fear and liberty are consistent; as when a man throweth his goods into the sea for *fear* the ship should sink, he doth it nevertheless very willingly, and may refuse to do it if he will; it is therefore the action of one that was *free:* so a man sometimes pays his debt, only for fear of imprisonment, which because nobody hindered him from detaining, was the action of a man at *liberty.* And generally all actions which men do in commonwealths, for fear of the law, are actions which the doers had liberty to omit.

Liberty and necessity are consistent: as in the water, that hath not only *liberty,* but a *necessity* of descending by the channel; so likewise in the actions which men voluntarily do: which, because they proceed from their will, proceed from *liberty;* and yet, because every act of man's will, and every desire, and inclination proceedeth from some cause, and that from another cause, in a continual chain, whose first link is in the hand of God the first of all causes, proceed from *necessity.* So that to him that could see the connection of those causes, the necessity of all men's voluntary actions, would appear manifest. And therefore God, that seeth and disposeth all things, seeth also that the liberty of man in doing what he will, is accompanied with the necessity of doing that which God will, and no more nor less. For though men may do many things which God does not command, nor is therefore author of them; yet they can have no passion nor appetite to anything of which appetite God's will is not the cause. And did not His will assure the *necessity* of man's will, and consequently of all that on man's will dependeth, the *liberty* of men would be a contradiction, and impediment to the omnipotence and liberty of God. And this shall

suffice, as to the matter in hand, of that natural liberty, which only is properly called liberty.

But as men, for the attaining of peace and conservation of themselves thereby, have made an artificial man, which we call a commonwealth; so also have they made artificial chains, called *civil laws,* which they themselves, by mutual covenants, have fastened, at one end, to the lips of that man or assembly to whom they have given the sovereign power, and at the other end to their own ears. These bonds, in their own nature but weak, may nevertheless be made to hold, by the danger, though not by the difficulty, of breaking them.

In relation to these bonds only it is, that I am to speak now of the *liberty of subjects.* For seeing there is no commonwealth in the world wherein there be rules enough set down, for the regulating of all the actions and words of men; as being a thing impossible: it followeth necessarily that in all kinds of actions by the laws praetermitted, men have the liberty of doing what their own reasons shall suggest, for the most profitable to themselves. For if we take liberty in the proper sense for corporal liberty; that is to say, freedom from chains and prison; it were very absurd for men to clamor as they do, for the liberty they so manifestly enjoy. Again, if we take liberty for an exemption from laws, it is no less absurd for men to demand as they do, that liberty by which all other men may be masters of their lives. And yet, as absurd as it is, this is it they demand; not knowing that the laws are of no power to protect them, without a sword in the hands of a man, or men, to cause those laws to be put in execution. The liberty of a subject lieth therefore only in those things which in regulating their actions, the sovereign hath praetermitted: such as is the liberty to buy, and sell, and otherwise contract with one another; to choose their own abode, their own diet, their own trade of life, and institute their children as they themselves think fit; and the like.

Nevertheless we are not to understand that by such liberty, the sovereign power of life and death is either abolished or limited. For it has been already shown that nothing the

sovereign representative can do to a subject, on what pretence soever, can properly be called injustice, or injury; because every subject is author of every act the sovereign doth; so that he never wanteth right to anything, otherwise than as he himself is the subject of God, and bound thereby to observe the laws of nature. And therefore it may, and doth often happen in commonwealths, that a subject may be put to death, by the command of the sovereign power, and yet neither do the other wrong; as when Jephtha caused his daughter to be sacrificed: in which, and the like cases, he that so dieth, had liberty to do the action for which he is, nevertheless, without injury put to death. And the same holdeth also in a sovereign prince that putteth to death an innocent subject. For though the action be against the law of nature, as being contrary to equity, as was the killing of Uriah by David; yet it was not an injury to Uriah, but to God. Not to Uriah, because the right to do what he pleased was given him by Uriah himself; and yet to God, because David was God's subject, and prohibited all iniquity by the law of nature: which distinction, David himself, when he repented the fact, evidently confirmed, saying, "To Thee only have I sinned." In the same manner, the people of Athens, when they banished the most potent of their commonwealth for ten years, thought they committed no injustice; and yet they never questioned what crime he had done, but what hurt he would do: nay they commanded the banishment of they knew not whom; and every citizen bringing his oystershell into the market place, written with the name of him he desired should be banished, without actually accusing him, sometimes banished an Aristides, for his reputation of justice, and sometimes a scurrilous jester, as Hyperbolus, to make a jest of it. And yet a man cannot say the sovereign people of Athens wanted right to banish them, or an Athenian the liberty to jest, or to be just.

The liberty whereof there is so frequent and honorable mention in the histories and philosophy of the ancient Greeks and Romans, and in the writings and discourse of those that

from them have received all their learning in the politics, is not the liberty of particular men, but the liberty of the commonwealth; which is the same with that which every man then should have, if there were no civil laws nor commonwealth at all. And the effects of it also be the same. For as amongst masterless men, there is perpetual war of every man against his neighbor; no inheritance, to transmit to the son, nor to expect from the father; no propriety of goods or lands; no security; but a full and absolute liberty in every particular man: so in states, and commonwealths not dependent on one another, every commonwealth, not every man, has an absolute liberty, to do what it shall judge—that is to say, what that man, or assembly that representeth it, shall judge—most conducing to their benefit. But withal, they live in the condition of a perpetual war, and upon the confines of battle, with their frontiers armed, and cannons planted against their neighbors round about. The Athenians and Romans were free; that is, free commonwealths: not that any particular men had the liberty to resist their own representative, but that their representative had the liberty to resist or invade other people. There is written on the turrets of the city of Lucca in great characters at this day, the word *libertas;* yet no man can thence infer that a particular man has more liberty or immunity from the service of the commonwealth there than in Constantinople. Whether a commonwealth be monarchical or popular, the freedom is still the same.

But it is an easy thing for men to be deceived by the specious name of liberty; and, for want of judgment to distinguish, mistake that for their private inheritance and birthright, which is the right of the public only. And when the same error is confirmed by the authority of men in reputation for their writings on this subject, it is no wonder if it produce sedition and change of government. In these western parts of the world, we are made to receive our opinions concerning the institution and rights of commonwealths from Aristotle, Cicero, and other men, Greeks and Romans, that

living under popular states, derived those rights not from the principles of nature, but transcribed them into their books out of the practice of their own commonwealths, which were popular; as the grammarians describe the rules of language out of the practice of the time, or the rules of poetry out of the poems of Homer and Virgil. And because the Athenians were taught, to keep them from desire of changing their government, that they were freemen, and all that lived under monarchy were slaves; therefore Aristotle puts it down in his *Politics* (Lib. VI, Cap. ii), "In democracy, liberty is to be supposed; for it is commonly held that no man is free in any other government." And as Aristotle, so Cicero and other writers have grounded their civil doctrine on the opinions of the Romans, who were taught to hate monarchy, at first, by them that having deposed their sovereign, shared amongst them the sovereignty of Rome; and afterwards by their successors. And by reading of these Greek and Latin authors, men from their childhood have gotten a habit, under a false show of liberty, of favoring tumults, and of licentious controlling the actions of their sovereigns, and again of controlling those controllers; with the effusion of so much blood, as I think I may truly say, there was never anything so dearly bought as these western parts have bought the learning of the Greek and Latin tongues.

To come now to the particulars of the true liberty of a subject—that is to say, what are the things which, though commanded by the sovereign, he may nevertheless without injustice refuse to do,—we are to consider, what rights we pass away when we make a commonwealth; or, which is all one, what liberty we deny ourselves by owning all the actions, without exception, of the man, or assembly, we make our sovereign. For in the act of our *submission* consisteth both our *obligation* and our *liberty;* which must therefore be inferred by arguments taken from thence: there being no obligation on any man which ariseth not from some act of his own; for all men equally are by nature free. And because such arguments must either be drawn from the express words, "I

authorize all his actions," or from the intention of him that submitteth himself to his power, which intention is to be understood by the end for which he so submitteth; the obligation, and liberty of the subject, is to be derived either from those words or others equivalent, or else from the end of the institution of sovereignty, namely, the peace of the subjects within themselves and their defence against a common enemy.

First therefore, seeing sovereignty by institution is by covenant of everyone to everyone; and sovereignty by acquisition, by covenants of the vanquished to the victor, or child to the parent; it is manifest that every subject has liberty in all those things, the right whereof cannot by covenant be transferred. I have shewn before, in the fourteenth chapter, that covenants not to defend a man's own body are void. Therefore:

If the sovereign command a man, though justly condemned, to kill, wound, or maim himself; or not to resist those that assault him; or to abstain from the use of food, air, medicine, or any other thing, without which he cannot live; yet hath that man the liberty to disobey.

If a man be interrogated by the sovereign, or his authority, concerning a crime done by himself, he is not bound, without assurance of pardon, to confess it; because no man, as I have shown in the same chapter, can be obliged by covenant to accuse himself.

Again, the consent of a subject to sovereign power is contained in these words, "I authorize, or take upon me, all his actions"; in which there is no restriction at all of his own former natural liberty: for by allowing him to kill me, I am not bound to kill myself when he commands me. It is one thing to say, "Kill me, or my fellow, if you please"; another thing to say, "I will kill myself, or my fellow." It followeth therefore, that:

No man is bound by the words themselves, either to kill himself or any other man; and consequently, that the obligation a man may sometimes have, upon the command of the sovereign to execute any dangerous or dishonorable office, dependeth not on the words of our submission, but on the

intention, which is to be understood by the end thereof. When therefore our refusal to obey, frustrates the end for which the sovereignty was ordained, then there is no liberty to refuse; otherwise there is.

Upon this ground, a man that is commanded as a soldier to fight against the enemy, though his sovereign have right enough to punish his refusal with death, may nevertheless in many cases refuse, without injustice; as when he substituteth a sufficient soldier in his place: for in this case he deserteth not the service of the commonwealth. And there is allowance to be made for natural timorousness; not only to women, of whom no such dangerous duty is expected, but also to men of feminine courage. When armies fight, there is on one side, or both, a running away; yet when they do it not out of treachery, but fear, they are not esteemed to do it unjustly, but dishonorably. For the same reason, to avoid battle is not injustice, but cowardice. But he that enrolleth himself a soldier, or taketh imprest money, taketh away the excuse of a timorous nature; and is obliged not only to go to the battle, but also not run from it, without his captain's leave. And when the defence of the commonwealth requireth at once the help of all that are able to bear arms, everyone is obliged; because otherwise the institution of the commonwealth, which they have not the purpose or courage to preserve, was in vain.

To resist the sword of the commonwealth in defence of another man, guilty or innocent, no man hath liberty; because such liberty takes away from the sovereign the means of protecting us, and is therefore destructive of the very essence of government. But in case a great many men together have already resisted the sovereign power unjustly, or committed some capital crime, for which every one of them expecteth death, whether have they not the liberty then to join together, and assist and defend one another? Certainly they have; for they but defend their lives, which the guilty man may as well do as the innocent. There was indeed injustice in the first breach of their duty; their bearing of arms subsequent to it, though it be to maintain what they have done, is no new

unjust act. And if it be only to defend their persons, it is not unjust at all. But the offer of pardon taketh from them, to whom it is offered, the plea of self-defence, and maketh their perseverance in assisting, or defending the rest, unlawful.

As for other liberties, they depend on the silence of the law. In cases where the sovereign has prescribed no rule, there the subject hath the liberty to do, or forbear, according to his own discretion. And therefore such liberty is in some places more, and in some less; and in some times more, in other times less, according as they that have the sovereignty shall think most convenient. As for example, there was a time when in England a man might enter into his own land, and dispossess such as wrongfully possessed it, by force. But in after times, that liberty of forcible entry was taken away, by a statute made, by the king, in parliament. And in some places of the world, men have the liberty of many wives; in other places such liberty is not allowed.

If a subject have a controversy with his sovereign, of debt, or of right of possession of lands or goods, or concerning any service required at his hands, or concerning any penalty, corporal, or pecuniary, grounded on a precedent law; he hath the same liberty to sue for his right as if it were against a subject, and before such judges as are appointed by the sovereign. For seeing the sovereign demandeth by force of a former law and not by virtue of his power, he declareth thereby, that he requireth no more than shall appear to be due by that law. The suit therefore is not contrary to the will of the sovereign; and consequently the subject hath the liberty to demand the hearing of his cause, and sentence, according to that law. But if he demand or take anything by pretence of his power, there lieth, in that case, no action of law; for all that is done by him in virtue of his power, is done by the authority of every subject, and consequently he that brings an action against the sovereign, brings it against himself.

If a monarch, or sovereign assembly, grant a liberty to all or any of his subjects, which grant standing, he is disabled to

provide for their safety, the grant is void; unless he directly renounce, or transfer the sovereignty to another. For in that he might openly, if it had been his will, and in plain terms, have renounced or transferred it, and did not; it is to be understood it was not his will, but that the grant proceeded from ignorance of the repugnancy between such a liberty and the sovereign power; and therefore the sovereignty is still retained; and consequently all those powers, which are necessary to the exercising thereof; such as are the power of war, and peace, of judicature, of appointing officers, and councillors, of levying money, and the rest named in the eighteenth chapter.

The obligation of subjects to the sovereign, is understood to last as long, and no longer, than the power lasteth by which he is able to protect them. For the right men have by nature to protect themselves, when none else can protect them, can by no covenant be relinquished. The sovereignty is the soul of the commonwealth; which once departed from the body, the members do no more receive their motion from it. The end of obedience is protection; which, wheresoever a man seeth it, either in his own or in another's sword, nature applieth his obedience to it, and his endeavor to maintain it. And though sovereignty, in the intention of them that make it, be immortal; yet it is in its own nature, not only subject to violent death, by foreign war; but also through the ignorance, and passions of men, it hath in it, from the very institution, many seeds of a natural mortality, by intestine discord.

If a subject be taken prisoner in war, or his person or his means of life be within the guards of the enemy, and hath his life and corporal liberty given him on condition to be subject to the victor, he hath liberty to accept the condition; and having accepted it, is the subject of him that took him, because he had no other way to preserve himself. The case is the same, if he be detained on the same terms in a foreign country. But if a man be held in prison, or bonds, or is not trusted with the liberty of his body, he cannot be understood to be bound by covenant to subjection; and therefore may, if he can, make his escape by any means whatsoever.

If a monarch shall relinquish the sovereignty both for himself and his heirs, his subjects return to the absolute liberty of nature; because, though nature may declare who are his sons, and who are the nearest of his kin; yet it dependeth on his own will, as hath been said in the precedent chapter, who shall be his heir. If therefore he will have no heir, there is no sovereignty, nor subjection. The case is the same, if he die without known kindred, and without declaration of his heir. For then there can no heir be known, and consequently no subjection be due.

If the sovereign banish his subject; during the banishment, he is not subject. But he that is sent on a message, or hath leave to travel, is still subject; but it is by contract between sovereigns, not by virtue of the covenant of subjection. For whosoever entereth into another's dominion, is subject to all the laws thereof; unless he have a privilege of the amity of the sovereigns, or by special licence.

If a monarch subdued by war, render himself subject to the victor; his subjects are delivered from their former obligation, and become obliged to the victor. If he be held prisoner, or have not the liberty of his own body, he is not understood to have given away the right of sovereignty; and therefore his subjects are obliged to yield obedience to the magistrates formerly placed, governing not in their own name, but in his. For, his right remaining, the question is only of the administration; that is to say, of the magistrates and officers; which, if he have not means to name, he is supposed to approve those which he himself had formerly appointed. . . .

[Having treated of the generation, form, and power of a commonwealth, Hobbes now proceeds in Chapters XXII–XXX, here omitted, to discuss various particular topics: (1) of the functions within the commonwealth of subordinate governing bodies and associations, both political and private, such as representative assemblies, provincial, colonial and municipal governments, corporations, and trade associations, etc.; (2) of the relation of public ministers for instruction, judicature, execution and counsel to the sovereign power; (3) of the rights of the sovereign to regulate

trade, establish a monetary system, levy taxes, govern colonies and, in general, determine all laws of property; (4) of the role of counsellors to the sovereign; (5) of civil law, its relation to the law of nature and its entire dependence upon the will of the sovereign, both for its establishment and its interpretation; (6) of crimes, their kinds and causes, and of the rationale of punishment; (7) of those things that weaken, or tend to the dissolution of a commonwealth; and (8) of the functions to be fulfilled by that man, or assembly of men, in whom the sovereignty inheres.]

CHAPTER XXXI

OF THE KINGDOM OF GOD BY NATURE

THAT the condition of mere nature—that is to say, of absolute liberty, such as is theirs that neither are sovereigns nor subjects—is anarchy, and the condition of war; that the precepts by which men are guided to avoid that condition, are the laws of nature; that a commonwealth without sovereign power, is but a word without substance, and cannot stand; that subjects owe to sovereigns simple obedience, in all things wherein their obedience is not repugnant to the laws of God: I have sufficiently proved, in that which I have already written. There wants only, for the entire knowledge of civil duty, to know what are those laws of God. For without that, a man knows not, when he is commanded anything by the civil power, whether it be contrary to the law of God or not: and so, either by too much civil obedience, offends the Divine Majesty; or through fear of offending God, transgresses the commandments of the commonwealth. To avoid both these rocks, it is necessary to know what are the laws divine. And seeing the knowledge of all law dependeth on the knowledge of the sovereign power, I shall say something in that which followeth, of the *Kingdom of God*. . . .

The right of nature, whereby God reigneth over men, and punisheth those that break His laws, is to be derived, not from His creating them, as if He required obedience as of gratitude

for His benefits, but from His *irresistible power.* I have formerly shown how the sovereign right ariseth from pact: to show how the same right may arise from nature, requires no more but to show in what case it is never taken away. Seeing all men by nature had right to all things, they had right every one to reign over all the rest. But because this right could not be obtained by force, it concerned the safety of everyone, laying by that right, to set up men with sovereign authority, by common consent, to rule and defend them; whereas if there had been any man of power irresistible, there had been no reason why he should not by that power have ruled and defended both himself and them, according to his own discretion. To those therefore whose power is irresistible, the dominion of all men adhereth naturally by their excellence of power; and consequently it is from that power that the kingdom over men, and the right of afflicting men at His pleasure, belongeth naturally to God Almighty; not as Creator, and gracious, but as omnipotent. And though punishment be due for sin only, because by that word is understood affliction for sin; yet the right of afflicting is not always derived from men's sin, but from God's power . . .

Having spoken of the right of God's sovereignty as grounded only on nature, we are to consider next what are the Divine laws, or dictates of natural reason; which laws concern either the natural duties of one man to another, or the honor naturally due to our Divine Sovereign. The first are the same laws of nature, of which I have spoken already in the fourteenth and fifteenth chapters of this treatise; namely, equity, justice, mercy, humility, and the rest of the moral virtues. It remaineth therefore that we consider, what precepts are dictated to men by their natural reason only, without other word of God, touching the honor and worship of the Divine Majesty.

Honor consisteth in the inward thought, and opinion of the power and goodness, of another; and therefore to honor God, is to think as highly of His power and goodness as is possible. And of that opinion, the external signs appearing in

the words and actions of men, are called *worship;* which is one part of that which the Latins understand by the word *cultus.* For *cultus* signifieth properly and constantly, that labor which a man bestows on anything, with a purpose to make benefit by it. Now those things whereof we make benefit, are either subject to us, and the profit they yield followeth the labor we bestow upon them, as a natural effect; or they are not subject to us, but answer our labor according to their own wills. In the first sense, the labor bestowed on the earth is called *culture;* and the education of children, a culture of their minds. In the second sense, where men's wills are to be wrought to our purpose not by force but by complaisance, it signifieth as much as courting: that is, a winning of favor by good offices; as by praises, by acknowledging their power, and by whatsoever is pleasing to them from whom we look for any benefit. And this is properly *worship:* in which sense *Publicola* is understood for a worshipper of the people; and *cultus Dei,* for the worship of God . . .

Again, there is a *public* and a *private* worship. Public, is the worship that a commonwealth performeth as one person. Private, is that which a private person exhibiteth. Public, in respect to the whole commonwealth, is free; but in respect to particular men, it is not so. Private, is in secret free; but in the sight of the multitude, it is never without some restraint, either from the laws or from the opinion of men; which is contrary to the nature of liberty.

The end of worship amongst men, is power. For where a man seeth another worshipped, he supposeth him powerful, and is the readier to obey him; which makes his power greater. But God has no ends: the worship we do Him, proceeds from our duty, and is directed, according to our capacity, by those rules of honor that reason dictateth to be done by the weak to the more potent men, in hope of benefit, for fear of damage, or in thankfulness for good already received from them.

That we may know what worship of God is taught us by

the light of nature, I will begin with His attributes. Where, first, it is manifest, we ought to attribute to Him *existence.* For no man can have the will to honor that which he thinks not to have any being.

Secondly, that those philosophers who said the world, or the soul of the world, was God, spake unworthily of Him, and denied His existence. For by God, is understood the cause of the world; and to say the world is God, is to say there is no cause of it, that is, no God.

Thirdly, to say the world was not created, but eternal, seeing that which is eternal has no cause, is to deny there is a God.

Fourthly, that they who, attributing, as they think, ease to God, take from Him the care of mankind; take from Him His honor: for it takes away men's love and fear of Him, which is the root of honor.

Fifthly, in those things that signify greatness and power, to say He is *finite* is not to honor Him: for it is not a sign of the will to honor God, to attribute to Him less than we can; and finite is less than we can; because to finite, it is easy to add more.

Therefore to attribute *figure* to Him, is not honor; for all figure is finite:

Nor to say we conceive, and imagine, or have an *idea* of Him, in our mind; for whatsoever we conceive is finite:

Nor to attribute to Him *parts,* or *totality;* which are the attributes only of things finite:

Nor to say He is in this or that *place;* for whatsoever is in place, is bounded, and finite:

Nor that He is *moved,* or *resteth;* for both these attributes ascribe to Him place:

Nor that there be more Gods than one; because it implies them all finite; for there cannot be more than one infinite:

Nor to ascribe to Him (unless metaphorically, meaning not the passion but the effect) passions that partake of grief, as repentance, anger, mercy; or of want, as appetite, hope, desire; or of any passive faculty; for passion is power limited by somewhat else.

And therefore when we ascribe to God a *will,* it is not to be understood, as that of man, for a rational appetite; but as the power by which He affecteth every thing.

Likewise when we attribute to Him *sight,* and other acts of sense; as also *knowledge,* and *understanding;* which in us is nothing else but a tumult of the mind, raised by external things that press the organical parts of man's body: for there is no such thing in God; and being things that depend on natural causes, cannot be attributed to Him.

He that will attribute to God nothing but what is warranted by natural reason, must either use such negative attributes, as *infinite, eternal, incomprehensible;* or superlatives, as *most high, most great,* and the like; or indefinite, as *good, just, holy, creator,* and in such sense as if he meant not to declare what He is (for that were to circumscribe Him within the limits of our fancy), but how much we admire Him, and how ready we would be to obey Him; which is a sign of humility, and of a will to honor Him as much as we can. For there is but one name to signify our conception of His nature, and that is, *I am:* and but one name of His relation to us, and that is, *God;* in which is contained Father, King, and Lord . . .

But seeing a commonwealth is but one person, it ought also to exhibit to God but one worship; which then it doth when it commandeth it to be exhibited by private men, publicly. And this is public worship; the property whereof is to be *uniform:* for those actions that are done differently by different men, cannot be said to be a public worship. And therefore, where many sorts of worship be allowed, proceeding from different religions of private men, it cannot be said there is any public worship, nor that the commonwealth is of any religion at all.

And because words, and consequently the attributes of God, have their signification by agreement and constitution of men, those attributes are to be held significative of honor, that men intend shall so be; and whatsoever may be done by the wills of particular men, where there is no law but reason,

may be done by the will of the commonwealth, by laws civil. And because a commonwealth hath no will, nor makes no laws but those that are made by the will of him or them that have the sovereign power; it followeth that those attributes which the sovereign ordaineth, in the worship of God, for signs of honor, ought to be taken and used for such, by private men in their public worship.

But because not all actions are signs by constitution, but some are naturally signs of honor, others of contumely; these latter, which are those that men are ashamed to do in the sight of them they reverence, cannot be made by human power a part of Divine worship; nor the former, such as are decent, modest, humble behavior, ever be separated from it. But whereas there be an infinite number of actions and gestures of an indifferent nature; such of them as the commonwealth shall ordain to be publicly and universally in use, as signs of honor and part of God's worship, are to be taken and used for such by the subjects. And that which is said in the Scripture, "It is better to obey God than man," hath place in the kingdom of God by pact, and not by nature.

Having thus briefly spoken of the natural kingdom of God, and His natural laws, I will add only to this chapter a short declaration of His natural punishments. There is no action of man in this life, that is not the beginning of so long a chain of consequences, as no human providence is high enough to give a man a prospect to the end. And in this chain, there are linked together both pleasing and unpleasing events; in such manner, as he that will do anything for his pleasure, must engage himself to suffer all the pains annexed to it; and these pains are the natural punishments of those actions, which are the beginning of more harm than good. And hereby it comes to pass that intemperance is naturally punished with diseases; rashness, with mischances; injustice, with the violence of enemies; pride, with ruin; cowardice, with oppression; negligent government of princes, with rebellion; and rebellion, with slaughter. For seeing punishments are consequent to the breach of laws, natural punishments

must be naturally consequent to the breach of the laws of nature; and therefore follow them as their natural, not arbitrary effects.

And thus far concerning the constitution, nature, and right of sovereigns, and concerning the duty of subjects, derived from the principles of natural reason. And now, considering how different this doctrine is from the practice of the greatest part of the world, especially of these western parts that have received their moral learning from Rome and Athens, and how much depth of moral philosophy is required in them that have the administration of the sovereign power; I am at the point of believing this my labor as useless as the commonwealth of Plato. For he also is of opinion that it is impossible for the disorders of state, and change of governments by civil war, ever to be taken away, till sovereigns be philosophers. But when I consider again, that the science of natural justice is the only science necessary for sovereigns and their principal ministers; and that they need not be charged with the sciences mathematical, as by Plato they are, farther than by good laws to encourage men to the study of them; and that neither Plato, nor any other philosopher hitherto, hath put into order, and sufficiently or probably proved all the theorems of moral doctrine, that men may learn thereby both how to govern and how to obey; I recover some hope, that one time or other, this writing of mine may fall into the hands of a sovereign who will consider it himself (for it is short, and I think clear) without the help of any interested or envious interpreter; and by the exercise of entire sovereignty, in protecting the public teaching of it, convert this truth of speculation into the utility of practice. . . .

[Parts III and IV of Leviathan are now, for the most part, of merely historical interest. In part III, "Of a Christian Commonwealth," Hobbes attempts by a boldly heterodox exegesis of Scripture "to show what are the consequences that seem to me deducible from the principles of Christian politics (which are the holy Scriptures), in confirmation of the power of civil sovereigns, and the duty of their subjects." His basic intention is to prove

from the Scriptures themselves that "the kingdom of Christ is not to begin till the general resurrection"; therefore the Pope, though a minister of the Christian faith, is not the vicar of Christ on earth, and his claim that the temporal or civil power is subject to the spiritual is invalid; whence it must be concluded that, prior to the second coming of Christ (at which time He will establish His kingdom here on earth), the supreme power over religion is vested in the temporal sovereign. Obedience to God and to the civil sovereign can never, therefore, be inconsistent, since if the sovereign be a Christian, he is the sole fit judge of what may properly be taught and practiced in matters of religion, and if he be an infidel, yet, since faith is "internal and invisible," his Christian subjects "have the license that Naaman had, and need not put themselves in danger for it. But if they do, they ought to expect their reward in heaven, and not complain of their lawful sovereign; much less make war upon him." The absolute supremacy of the temporal sovereign thus precludes that "most frequent pretext of sedition and civil war," the supposed contrary commands of man and God.

Part IV is entitled "Of the Kingdom of Darkness." "Besides these sovereign powers, *divine* and *human,* of which I have hitherto discoursed, there is mention in Scripture of another power, namely (Eph., vi. 12) that of *the rulers of the darkness of this world;* (Matth., xii. 26) *the kingdom of Satan* . . ." This "kingdom of darkness, as it is set forth in these and other places of the Scripture, is nothing else but a *confederacy of deceivers, that to obtain dominion over men in this present world, endeavor by dark and erroneous doctrines, to extinguish in them the light, both of nature and of the gospel; and so to disprepare them for the kingdom of God to come.*" Having treated of each of these causes in turn, Hobbes asks the final question: Who derives benefit from such darkness and who are its authors? His answer is that the benefit is priestly power, and the authors of "this darkness in religion, are the Roman and the presbyterian clergy." The Roman church was first and chief of these usurpers of the spiritual sovereignty: "But after this doctrine—that the Church now militant, is the kingdom of God spoken of in the Old and New Testament —was received in the world; the ambition and canvassing for the offices that belong thereunto, and especially for that great office of being Christ's lieutenant, and the pomp of them that obtained therein the principal public charges, became by degrees so evident,

that they lost the inward reverence due to the pastoral function: insomuch as the wisest men of them that had any power in the civil state, needed nothing but the authority of their princes, to deny them any further obedience . . . And if a man consider the original of this great ecclesiastical dominion, he will easily perceive that the Papacy is no other than the ghost of the deceased Roman Empire, sitting crowned upon the grave thereof. For so did the Papacy start up on a sudden out of the ruins of that heathen power." The reformation initiated by Henry VIII and consolidated under Elizabeth, which made the monarch head of the established church, must, for the peace and security of the realm, be defended against both priests and presbyters.

Hobbes closes his book with a short "Review, and Conclusion," in which he amends a few points in the argument and bids adieu to his readers: "And thus I have brought to an end my Discourse of Civil and Ecclesiastical Government, occasioned by the disorders of the present time, without partiality, without application, and without other design than to set before men's eyes the mutual relation between protection and obedience; of which the condition of human nature, and the laws divine, both natural and positive, require an inviolable observation. And though in the revolution of states, there can be no very good constellation for truths of this nature to be born under (as having an angry aspect from the dissolvers of an old government, and seeing but the backs of them that erect a new), yet I cannot think it will be condemned at this time, either by the public judge of doctrine, or by any that desires the continuance of public peace. And in this hope I return to my interrupted speculation of bodies natural; wherein, if God give me health to finish it, I hope the novelty will as much please, as in the doctrine of this artificial body it useth to offend. For such truth as opposeth no man's profit nor pleasure, is to all men welcome."]

JOHN LOCKE

An Essay Concerning Human Understanding

AN ESSAY CONCERNING HUMAN UNDERSTANDING

THE EPISTLE TO THE READER

READER:

I HERE put into thy hands what has been the diversion of some of my idle and heavy hours; if it has the good-luck to prove so of any of thine, and thou hast but half so much pleasure in reading as I had in writing it, thou wilt as little think thy money, as I do my pains, ill bestowed. Mistake not this for a commendation of my work; nor conclude, because I was pleased with the doing of it, that therefore I am fondly taken with it now it is done. He that hawks at larks and sparrows, has no less sport, though a much less considerable quarry, than he that flies at nobler game: and he is little acquainted with the subject of this treatise, the Understanding, who does not know, that as it is the most elevated faculty of the soul, so it is employed with a greater and more constant delight than any of the other. Its searches after truth are a sort of hawking and hunting, wherein the very pursuit makes a great part of the pleasure. Every step the mind takes in its progress towards knowledge makes some discovery, which is not only new, but the best, too, for the time at least.

For the understanding, like the eye, judging of objects only by its own sight, cannot but be pleased with what it discovers, having less regret for what has escaped it, because it is unknown. Thus he who has raised himself above the alms-basket, and not content to live lazily on scraps of begged

opinions, sets his own thoughts on work, to find and follow truth, will (whatever he lights on) not miss the hunter's satisfaction: every moment of his pursuit will reward his pains with some delight, and he will have reason to think his time not ill spent, even when he cannot much boast of any great acquisition.

This, reader, is the entertainment of those who let loose their own thoughts, and follow them in writing; which thou oughtest not to envy them, since they afford thee an opportunity of the like diversion, if thou wilt make use of thy own thoughts in reading. It is to them, if they are thy own, that I refer myself; but if they are taken upon trust from others, it is no great matter what they are, they not following truth, but some meaner consideration; and it is not worth while to be concerned what he says or thinks, who says or thinks only as he is directed by another. If thou judgest for thyself, I know thou wilt judge candidly; and then I shall not be harmed or offended, whatever be the censure. For, though it be certain that there is nothing in this treatise of the truth whereof I am not fully persuaded, yet I consider myself as liable to mistakes as I can think thee; and know that this book must stand or fall with thee, not by any opinion I have of it, but thy own. If thou findest little in it new or instructive to thee, thou art not to blame me for it. It was not meant for those that had already mastered this subject, and made a thorough acquaintance with their own understandings, but for my own information, and the satisfaction of a few friends, who acknowledged themselves not to have sufficiently considered it.

Were it fit to trouble thee with the history of this *Essay,* I should tell thee, that five or six friends, meeting at my chamber, and discoursing on a subject very remote from this, found themselves quickly at a stand by the difficulties that rose on every side. After we had awhile puzzled ourselves, without coming any nearer a resolution of those doubts which perplexed us, it came into my thoughts that we took a wrong course; and that, before we set ourselves upon inquiries of

that nature, it was necessary to examine our own abilities, and see what *objects* our understandings were, or were not, fitted to deal with. This I proposed to the company, who all readily assented; and thereupon it was agreed that this should be our first inquiry. Some hasty and undigested thoughts, on a subject I had never before considered, which I set down against our next meeting, gave the first entrance into this Discourse, which, having been thus begun by chance, was continued by intreaty; written by incoherent parcels; and, after long intervals of neglect, resumed again, as my humor or occasions permitted; and at last, in a retirement, where an attendance on my health gave me leisure, it was brought into that order thou now seest it.

This discontinued way of writing may have occasioned, besides others, two contrary faults, viz., that too little and too much may be said in it. If thou findest any thing wanting, I shall be glad that what I have writ gives thee any desire that I should have gone further: if it seems too much to thee, thou must blame the subject; for when I put pen to paper, I thought all I should have to say on this matter would have been contained in one sheet of paper; but the further I went, the larger prospect I had: new discoveries led me still on, and so it grew insensibly to the bulk it now appears in. I will not deny but possibly it might be reduced to a narrower compass than it is; and that some parts of it might be contracted; the way it has been writ in, by catches, and many long intervals of interruption, being apt to cause some repetitions. But, to confess the truth, I am now too lazy, or too busy, to make it shorter.

I am not ignorant how little I herein consult my own reputation when I knowingly let it go with a fault so apt to disgust the most judicious, who are always the nicest readers. But they who know sloth is apt to content itself with any excuse, will pardon me if mine has prevailed on me where I think I have a very good one. I will not, therefore, allege in my defence that the same notion, having different respects, may be convenient or necessary to prove or illustrate several parts

of the same discourse; and that so it has happened in many parts of this; but, waiving that, I shall frankly avow that I have sometimes dwelt long upon the same argument, and expressed it different ways, with a quite different design. I pretend not to publish this *Essay* for the information of men of large thoughts and quick apprehensions; to such masters of knowledge I profess myself a scholar, and therefore warn them beforehand not to expect anything here but what, being spun out of my own coarse thoughts, is fitted to men of my own size, to whom, perhaps, it will not be unacceptable that I have taken some pains to make plain and familiar to their thoughts some truths, which established prejudice, or the abstractedness of the ideas themselves, might render difficult. Some objects had need be turned on every side; and when the notion is new, as I confess some of these are to me, or out of the ordinary road, as I suspect they will appear to others, it is not one simple view of it that will gain it admittance into every understanding, or fix it there with a clear and lasting impression. There are few, I believe, who have not observed in themselves or others, that what in one way of proposing was very obscure, another way of expressing it has made very clear and intelligible; though afterward the mind found little difference in the phrases, and wondered why one failed to be understood more than the other. But everything does not hit alike upon every man's imagination. We have our understandings no less different than our palates; and he that thinks the same truth shall be equally relished by everyone in the same dress, may as well hope to feast everyone with the same sort of cookery; the meat may be the same, and the nourishment good, yet everyone not be able to receive it with that seasoning; and it must be dressed another way, if you will have it go down with some even of strong constitutions. The truth is, those who advised me to publish it, advised me, for this reason, to publish it as it is; and since I have been brought to let it go abroad, I desire it should be understood by whoever gives himself the pains to read it. I have so little affection to be in print, that if I were not flattered this *Essay* might

be of some use to others, as I think it has been to me, I should have confined it to the view of some friends, who gave the first occasion to it. My appearing therefore in print being on purpose to be as useful as I may, I think it necessary to make what I have to say as easy and intelligible to all sorts of readers as I can. And I had much rather the speculative and quick-sighted should complain of my being in some parts tedious, than that anyone, not accustomed to abstract speculations, or prepossessed with different notions, should mistake or not comprehend my meaning.

It will possibly be censured as a great piece of vanity or insolence in me, to pretend to instruct this our knowing age, it amounting to little less when I own that I publish this *Essay* with hopes that it may be useful to others. But if it may be permitted to speak freely of those who, with a feigned modesty, condemn as useless what they themselves write, methinks it savors much more of vanity or insolence to publish a book for any other end; and he fails very much of that respect he owes the public, who prints, and consequently expects that men should read, that wherein he intends not they should meet with anything of use to themselves or others: and should nothing else be found allowable in this treatise, yet my design will not cease to be so; and the goodness of my intention ought to be some excuse for the worthlessness of my present. It is that chiefly which secures me from the fear of censure, which I expect not to escape more than better writers. Men's principles, notions, and relishes are so different, that it is hard to find a book which pleases or displeases all men. I acknowledge the age we live in is not the least knowing, and therefore not the most easy to be satisfied. If I have not the good-luck to please, yet nobody ought to be offended with me. I plainly tell all my readers, except half a dozen, this treatise was not at first intended for them; and therefore they need not be at the trouble to be of that number. But yet if anyone thinks fit to be angry, and rail at it, he may do it securely; for I shall find some better way of spending my time than in such kind of conversation. I shall always

have the satisfaction to have aimed sincerely at truth and usefulness, though in one of the meanest ways. The commonwealth of learning is not at this time without master-builders, whose mighty designs in advancing the sciences will leave lasting monuments to the admiration of posterity: but everyone must not hope to be a Boyle or a Sydenham; and in an age that produces such masters as the great Huygenius, and the incomparable Mr. Newton, with some other of that strain, it is ambition enough to be employed as an under-laborer in clearing the ground a little, and removing some of the rubbish that lies in the way to knowledge; which certainly had been very much more advanced in the world, if the endeavors of ingenious and industrious men had not been much cumbered with the learned but frivolous use of uncouth, affected, or unintelligible terms introduced into the sciences, and there made an art of, to that degree that philosophy, which is nothing but the true knowledge of things, was thought unfit or uncapable to be brought into well-bred company and polite conversation. Vague and insignificant forms of speech, and abuse of language, have so long passed for mysteries of science; and hard or misapplied words, with little or no meaning, have, by prescription, such a right to be mistaken for deep learning and height of speculation; that it will not be easy to persuade either those who speak or those who hear them, that they are but the covers of ignorance, and hindrance of true knowledge. To break in upon the sanctuary of vanity and ignorance will be, I suppose, some service to human understanding: though so few are apt to think they deceive or are deceived in the use of words, or that the language of the sect they are of has any faults in it which ought to be examined or corrected, that I hope I shall be pardoned if I have in the third book dwelt long on this subject; and endeavored to make it so plain, that neither the inveterateness of the mischief, nor the prevalency of the fashion, shall be any excuse for those who will not take care about the meaning of their own words, and will not suffer the significancy of their expressions to be inquired into. . .

[The booksellers preparing for the Fourth Edition[1] of my *Essay,* gave me notice of it, that I might, if I had leisure, make any additions or alterations I should think fit. Whereupon I thought it convenient to advertise the reader, that besides several corrections I had made here and there, there was one alteration which it was necessary to mention, because it ran through the whole book, and is of consequence to be rightly understood. What I thereupon said was this:—

Clear and *distinct ideas* are terms which, though familiar and frequent in men's mouths, I have reason to think everyone who uses does not perfectly understand. And possibly 'tis but here and there one who gives himself the trouble to consider them so far as to know what he himself or others precisely mean by them. I have therefore in most places chose to put *determinate* or *determined,* instead of *clear* and *distinct,* as more likely to direct men's thoughts to my meaning in this matter. By those denominations, I mean some object in the mind, and consequently determined, i.e. such as it is there seen and perceived to be. This, I think, may fitly be called a determinate or determined idea, when such as it is at any time objectively in the mind and so determined there, it is annexed, and without variation determined, to a name or articulate sound, which is to be steadily the sign of that very same object of the mind, or determinate idea.

To explain this a little more particularly. By *determinate,* when applied to a simple idea, I mean that simple appearance which the mind has in its view, or perceives in itself, when that idea is said to be in it; by *determined,* when applied to a complex idea, I mean such an one as consists of a determinate number of certain simple or less complex ideas, joined in such a proportion and situation as the mind has before its view, and sees in itself, when that idea is present in it, or should be present in it, when a man gives a name to it. I say *should* be, because it is not everyone, nor perhaps anyone, who is so careful of his language as to use no word till he views in his mind the precise determined idea which he resolves to make it the sign of. The want of this is the cause of no small obscurity and confusion in men's thoughts and discourses. . . .]

[1]Published in 1700, the last edition to be published during Locke's lifetime.

INTRODUCTION

1. *An inquiry into the understanding, pleasant and useful.* —Since it is the *understanding* that sets man above the rest of sensible beings, and gives him all the advantage and dominion which he has over them, it is certainly a subject, even for its nobleness, worth our labor to inquire into. The understanding, like the eye, whilst it makes us see and perceive all other things, takes no notice of itself; and it requires art and pains to set it at a distance, and make it its own object. But whatever be the difficulties that lie in the way of this inquiry, whatever it be that keeps us so much in the dark to ourselves, sure I am that all the light we can let in upon our own minds, all the acquaintance we can make with our own understandings, will not only be very pleasant, but bring us great advantage in directing our thoughts in the search of other things.

2. *Design.*—This, therefore, being my purpose, to inquire into the original, certainty, and extent of *human knowledge,* together with the grounds and degrees of *belief, opinion,* and *assent,* I shall not at present meddle with the physical consideration of the mind, or trouble myself to examine wherein its essence consists or by what motions of our spirits, or alterations of our bodies, we come to have any *sensation* by our organs, or any *ideas* in our understandings; and whether those ideas do, in their formation, any or all of them, depend on matter or not. These are speculations which, however curious and entertaining, I shall decline, as lying out of my way in the design I am now upon. It shall suffice to my present purpose, to consider the discerning faculties of a man, as they are employed about the objects which they have to do with. And I shall imagine I have not wholly misemployed myself in the thoughts I shall have on this occasion, if, in this historical, plain method, I can give any account of the ways whereby our understandings come to attain those notions of things we have, and can set down any measures of the certainty of our knowledge, or the grounds of those persuasions which are to

be found amongst men, so various, different, and wholly contradictory; and yet asserted somewhere or other with such assurance and confidence, that he that shall take a view of the opinions of mankind, observe their opposition, and at the same time consider the fondness and devotion wherewith they are embraced, the resolution and eagerness wherewith they are maintained, may perhaps have reason to suspect that either there is no such thing as truth at all, or that mankind hath no sufficient means to attain a certain knowledge of it.

3. *Method.*—It is therefore worth while to search out the bounds between opinion and knowledge, and examine by what measures, in things whereof we have no certain knowledge, we ought to regulate our assent, and moderate our persuasions. In order whereunto, I shall pursue this following method:—

First, I shall inquire into the original of those *ideas,* notions, or whatever else you please to call them, which a man observes, and is conscious to himself he has in his mind; and the ways whereby the understanding comes to be furnished with them.

Secondly, I shall endeavor to show what *knowledge* the understanding hath by those ideas, and the certainty, evidence, and extent of it.

Thirdly, I shall make some inquiry into the nature and grounds of *faith* or *opinion;* whereby I mean, that assent which we give to any proposition as true, of whose truth yet we have no certain knowledge: and here we shall have occasion to examine the reasons and degrees of assent.

4. *Useful to know the extent of our comprehension.*—If by this inquiry into the nature of the understanding, I can discover the powers thereof, how far they reach, to what things they are in any degree proportionate, and where they fail us, I suppose it may be of use to prevail with the busy mind of man to be more cautious in meddling with things exceeding its comprehension, to stop when it is at the utmost extent of its tether, and to sit down in a quiet ignorance of those things which, upon examination, are found to be beyond the reach of our capacities. We should not then, perhaps, be so for-

ward, out of an affectation of an universal knowledge, to raise questions, and perplex ourselves and others with disputes, about things to which our understandings are not suited, and of which we cannot frame in our minds any clear or distinct perceptions, or whereof (as it has, perhaps, too often happened) we have not any notions at all. If we can find out how far the understanding can extend its view, how far it has faculties to attain certainty, and in what cases it can only judge and guess, we may learn to content ourselves with what is attainable by us in this state.

5. *Our capacity suited to our state and concerns.*—For though the comprehension of our understandings comes exceeding short of the vast extent of things, yet we shall have cause enough to magnify the bountiful Author of our being for that proportion and degree of knowledge He has bestowed on us, so far above all the rest of the inhabitants of this our mansion. Men have reason to be well satisfied with what God hath thought fit for them, since He has given them, as St. Peter says, *πάντα πρὸς ζωὴν καὶ εὐσέβειαν*, whatsoever is necessary for the conveniences of life, and information of virtue; and has put within the reach of their discovery, the comfortable provision for this life and the way that leads to a better. How short soever their knowledge may come of an universal or perfect comprehension of whatsoever is, it yet secures their great concernments that they have light enough to lead them to the knowledge of their Maker, and the sight of their own duties. Men may find matter sufficient to busy their heads and employ their hands with variety, delight, and satisfaction, if they will not boldly quarrel with their own constitution, and throw away the blessings their hands are filled with, because they are not big enough to grasp everything. We shall not have much reason to complain of the narrowness of our minds, if we will but employ them about what may be of use to us; for of that they are very capable: and it will be an unpardonable as well as childish peevishness, if we undervalue the advantages of our knowledge, and neglect to improve it to the ends for which it was given us, because

there are some things that are set out of the reach of it. It will be no excuse to an idle and untoward servant, who would not attend his business by candlelight, to plead that he had not broad sunshine. The candle that is set up in us shines bright enough for all our purposes. The discoveries we can make with this ought to satisfy us; and we shall then use our understandings right, when we entertain all objects in that way and proportion that they are suited to our faculties, and upon those grounds they are capable of being proposed to us; and not peremptorily or intemperately require demonstration, and demand certainty, where probability only is to be had, and which is sufficient to govern all our concernments. If we will disbelieve everything because we cannot certainly know all things, we shall do much-what as wisely as he who would not use his legs, but sit still and perish because he had no wings to fly.

6. *Knowledge of our capacity a cure of scepticism and idleness.*—When we know our own strength, we shall the better know what to undertake with hopes of success; and when we have well surveyed the *powers* of our own minds, and made some estimate what we may expect from them, we shall not be inclined either to sit still, and not set our thoughts on work at all, in despair of knowing any thing; nor, on the other side, question everything, and disclaim all knowledge, because some things are not to be understood. It is of great use to the sailor to know the length of his line, though he cannot with it fathom all the depths of the ocean; it is well he knows that it is long enough to reach the bottom at such places as are necessary to direct his voyage, and caution him against running upon shoals that may ruin him. Our business here is not to know all things, but those which concern our conduct. If we can find out those measures whereby a rational creature, put in that state which man is in in this world, may and ought to govern his opinions and actions depending thereon, we need not be troubled that some other things escape our knowledge.

7. *Occasion of this Essay.*—This was that which gave the

first rise to this Essay concerning the Understanding. For I thought that the first step towards satisfying several inquiries the mind of man was very apt to run into, was, to take a survey of our own understandings, examine our own powers, and see to what things they were adapted. Till that was done, I suspected we began at the wrong end, and in vain sought for satisfaction in a quiet and sure possession of truths that most concerned us, whilst we let loose our thoughts into the vast ocean of being; as if all that boundless extent were the natural and undoubted possession of our understandings, wherein there was nothing exempt from its decisions, or that escaped its comprehension. Thus men, extending their inquiries beyond their capacities, and letting their thoughts wander into those depths where they can find no sure footing, it is no wonder that they raise questions and multiply disputes, which, never coming to any clear resolution, are proper only to continue and increase their doubts, and to confirm them at last in perfect scepticism. Whereas, were the capacities of our understandings well considered, the extent of our knowledge once discovered, and the horizon found which sets the bounds between the enlightened and dark parts of things—between what is and what is not comprehensible by us—men would, perhaps with less scruple, acquiesce in the avowed ignorance of the one, and employ their thoughts and discourse with more advantage and satisfaction in the other.

8. *What 'idea' stands for.*—Thus much I thought necessary to say concerning the occasion of this inquiry into human understanding. But, before I proceed on to what I have thought on this subject, I must here, in the entrance, beg pardon of my reader for the frequent use of the word 'idea' which he will find in the following treatise. It being that term which, I think, serves best to stand for whatsoever is the *object* of the understanding when a man thinks, I have used it to express whatever is meant by phantasm, notion, species, or whatever it is which the mind can be employed about in thinking; and I could not avoid frequently using it.

I presume it will be easily granted me, that there are such *ideas* in men's minds. Everyone is conscious of them in himself; and men's words and actions will satisfy him that they are in others.

Our first inquiry, then, shall be, how they come into the mind. . . .

[Book I, here omitted, is entitled, "Neither Principles Nor Ideas Are Innate." Locke's object in this book is to pave the way for his own positive account of the origin of ideas by refuting a received theory, "that there are in the understanding certain innate principles; . . . as it were stamped upon the mind of man; which the soul receives in its very first being, and brings into the world with it." His fundamental argument against innate ideas proceeds from the premise that no idea can exist unperceived, in the mind: "For to imprint anything on the mind without the mind's perceiving it, seems to me hardly intelligible." Since no idea can exist unperceived, it follows that every *innate* idea must be perceived *prior* to any experience whatever; but experience itself shows that these supposed innate ideas are not the first, but the last, to be clearly apprehended by the mind. In fact, our knowledge begins with particular ideas and but gradually arrives at the most abstract and general notions. Thus the conception of innate ideas, on Locke's principle that what is *in* the mind must be perceived, involves the contradiction that what (on the theory) *must* come first in experience, in *fact* arrives last. The argument which would deny this fact, that from universal consent, Locke refutes by pointing out that infants, idiots, savages, and, for that matter, a great part of mankind are entirely ignorant of these supposed innate ideas. But, to avoid this, "it is usually answered that, all men know them and assent to them, *when they come to the use of reason;* and this is enough to prove them innate." Locke contends that this argument from consent on coming of age confuses *inneity,* as constituting "a distinct sort of truth," with *self-evidence.* Self-evident truths are those "perceived at first sight by bare intuition" as soon as the mind "turns its view that way." Propositions may very well have their origin in experience and yet be universally and necessarily true, in the sense that whenever a man reflects upon them he is forced to give his assent to their truth, since "the consideration of the nature of the things contained in

those words would not suffer him to think otherwise, how, or whensoever he is brought to reflect on them." Immediate assent, as soon as the given proposition is understood, does not therefore prove any proposition innate.

Finally, Locke asks, what are the practical consequences of a belief in innate principles? His answer is that, it has "eased the lazy from the pains of search, and stopped the inquiry of the doubtful concerning all that was once styled innate. And it was of no small advantage to those who affected to be masters and teachers, to make this the principle of principles,—*that principles must not be questioned.*" But perhaps, suggests Locke, "we should make greater progress in the discovery of rational and contemplative knowledge, if we sought it in the fountain, *in the consideration of things themselves;* and made use rather of our own thoughts than other men's to find it . . . The floating of other men's opinions in our brains, makes us not one jot the more knowing, though they happen to be true. What in them was science, is in us but opiniatrety; whilst we give up our assent only to reverend names, and do not, as they did, employ our own reason to understand those truths which gave them reputation."]

BOOK II: OF IDEAS

CHAPTER I

OF IDEAS IN GENERAL, AND THEIR ORIGINAL

1. *Idea is the object of thinking.*—Every man being conscious to himself that he thinks, and that which his mind is applied about whilst thinking being the ideas that are there, it is past doubt that men have in their mind several ideas, such as are those expressed by the words whitness, hardness, sweetness, thinking, motion, man, elephant, army, drunkenness, and others: it is in the first place then to be inquired, How he comes by them? I know it is a received doctrine, that men have native ideas and original characters stamped upon their minds in their very first being. This opinion I have at large

examined already; and, I suppose, what I have said in the foregoing book will be much more easily admitted, when I have shown whence the understanding may get all the ideas it has, and by what ways and degrees they may come into the mind; for which I shall appeal to everyone's own observation and experience.

2. *All ideas come from sensation or reflection.*—Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas; how comes it to be furnished? Whence comes it by that vast store, which the busy and boundless fancy of man has painted on it with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from experience. In that all our knowledge is founded, and from that it ultimately derives itself. Our observation, employed either about external sensible objects, or about the internal operations of our minds, perceived and reflected on by ourselves, is that which supplies our understandings with all the materials of thinking. These two are the fountains of knowledge, from whence all the ideas we have, or can naturally have, do spring.

3. *The object of sensation one source of ideas.*—First, our senses, conversant about particular sensible objects, do convey into the mind several distinct perceptions of things, according to those various ways wherein those objects do affect them; and thus we come by those ideas we have of yellow, white, heat, cold, soft, hard, bitter, sweet, and all those which we call sensible qualities; which when I say the senses convey into the mind, I mean, they from external objects convey into the mind what produces there those perceptions. This great source of most of the ideas we have, depending wholly upon our senses, and derived by them to the understanding, I call *sensation.*

4. *The operations of our minds the other source of them.*—Secondly, the other fountain, from which experience furnisheth the understanding with ideas, is the perception of the operations of our own minds within us, as it is employed

about the ideas it has got; which operations when the soul comes to reflect on and consider, do furnish the understanding with another set of ideas which could not be had from things without; and such are perception, thinking, doubting, believing, reasoning, knowing, willing, and all the different actings of our own minds; which we, being conscious of, and observing in ourselves, do from these receive into our understandings as distinct ideas, as we do from bodies affecting our senses. This source of ideas every man has wholly in himself; and though it be not sense as having nothing to do with external objects, yet it is very like it, and might properly enough be called *internal sense*. But as I call the other sensation, so I call this *reflection,* the ideas it affords being such only as the mind gets by reflecting on its own operations within itself. By reflection, then, in the following part of this discourse, I would be understood to mean that notice which the mind takes of its own operations, and the manner of them, by reason whereof there come to be ideas of these operations in the understanding. These two, I say, viz., external material things as the objects of sensation, and the operations of our own minds within as the objects of reflection, are, to me, the only originals from whence all our ideas take their beginnings. The term *operations* here, I use in a large sense, as comprehending not barely the actions of the mind about its ideas, but some sort of passions arising sometimes from them, such as is the satisfaction or uneasiness arising from any thought.

5. *All our ideas are of the one or the other of these.*—The understanding seems to me not to have the least glimmering of any ideas which it doth not receive from one of these two. *External objects* furnish the mind with the ideas of sensible qualities, which are all those different perceptions they produce in us; and *the mind* furnishes the understanding with ideas of its own operations.

These, when we have taken a full survey of them, and their several modes, [combinations, and relations,] we shall find to contain all our whole stock of ideas; and that we have nothing

in our minds which did not come in one of these two ways. Let anyone examine his own thoughts, and thoroughly search into his understanding, and then let him tell me, whether all the original ideas he has there, are any other than of the objects of his senses, or of the operations of his mind considered as objects of his reflection; and how great a mass of knowledge soever he imagines to be lodged there, he will, upon taking a strict view, see that he has not any idea in his mind but what one of these two have imprinted, though perhaps with infinite variety compounded and enlarged by the understanding, as we shall see hereafter.

6. *Observable in children.*—He that attentively considers the state of a child at his first coming into the world, will have little reason to think him stored with plenty of ideas that are to be the matter of his future knowledge. It is by degrees he comes to be furnished with them; and though the ideas of obvious and familiar qualities imprint themselves before the memory begins to keep a register of time or order, yet it is often so late before some unusual qualities come in the way, that there are few men that cannot recollect the beginning of their acquaintance with them: and, if it were worth while, no doubt a child might be so ordered as to have but a very few even of the ordinary ideas till he were grown up to a man. But all that are born into the world being surrounded with bodies that perpetually and diversely affect them, variety of ideas, whether care be taken about it or not, are imprinted on the minds of children. Light and colors are busy at hand everywhere when the eye is but open; sounds and some tangible qualities fail not to solicit their proper senses, and force an entrance to the mind; but yet I think it will be granted easily, that if a child were kept in a place where he never saw any other but black and white till he were a man, he would have no more ideas of scarlet or green than he that from his childhood never tasted an oyster or a pineapple has of those particular relishes.

7. *Men are differently furnished with these according to the different objects they converse with.*—Men then come to

be furnished with fewer or more simple ideas from without, according as the objects they converse with afford greater or less variety; and from the operations of their minds within, according as they more or less reflect on them. For, though he that contemplates the operations of his mind cannot but have plain and clear ideas of them; yet, unless he turn his thoughts that way, and considers them attentively, he will no more have clear and distinct ideas of all the operations of his mind, and all that may be observed therein, than he will have all the particular ideas of any landscape, or of the parts and motions of a clock, who will not turn his eyes to it, and with attention heed all the parts of it. The picture or clock may be so placed, that they may come in his way every day; but yet he will have but a confused idea of all the parts they are made of, till he applies himself with attention to consider them each in particular.

8. *Ideas of reflection later, because they need attention.*— And hence we see the reason why it is pretty late before most children get ideas of the operations of their own minds; and some have not any very clear or perfect ideas of the greatest part of them all their lives: because, though they pass there continually, yet like floating visions, they make not deep impressions enough to leave in the mind, clear, distinct, lasting ideas, till the understanding turns inwards upon itself, reflects on its own operations, and makes them the objects of its own contemplation. Children, when they come first into it, are surrounded with a world of new things, which, by a constant solicitation of their senses, draw the mind constantly to them, forward to take notice of new, and apt to be delighted with the variety of changing objects. Thus the first years are usually employed and diverted in looking abroad. Men's business in them is to acquaint themselves with what is to be found without; and so, growing up in a constant attention to outward sensations, seldom make any considerable reflection on what passes within them till they come to be of riper years; and some scarce ever at all.

9. *The soul begins to have ideas when it begins to per-*

ceive.—To ask, at what time a man has first any ideas, is to ask when he begins to perceive; *having ideas,* and *perception,* being the same thing. I know it is an opinion, that the soul always thinks; and that it has the actual perception of ideas in itself constantly, as long as it exists; and that actual thinking is as inseparable from the soul, as actual extension is from the body: which if true, to inquire after the beginning of a man's ideas is the same as to inquire after the beginning of his soul. For by this account, soul and its ideas, as body and its extension, will begin to exist both at the same time.

10. *The soul thinks not always; for this wants proofs.*—But whether the soul be supposed to exist antecedent to, or coeval with, or some time after, the first rudiments or organization, or the beginnings of life in the body, I leave to be disputed by those who have better thought of that matter. I confess myself to have one of those dull souls that doth not perceive itself always to contemplate ideas; nor can conceive it any more necessary for the soul always to think, than for the body always to move; the perception of ideas being, as I conceive, to the soul, what motion is to the body: not its essence, but one of its operations; and, therefore, though thinking be supposed never so much the proper action of the soul, yet it is not necessary to suppose that it should be always thinking, always in action. That, perhaps, is the privilege of the infinite Author and Preserver of all things, "who never slumbers nor sleeps;" but it is not competent to any finite being, at least not to the soul of man. We know certainly, by experience, that we sometimes think; and thence draw this infallible consequence—that there is something in us that has a power to think. But whether that substance perpetually thinks, or no, we can be no farther assured than experience informs us. For to say that actual thinking is essential to the soul, and inseparable from it, is to beg what is in question, and not to prove it by reason; which is necessary to be done, if it be not a self-evident proposition. But whether this—that "the soul always thinks," be a self-evident proposition, that everybody assents to on first hearing, I appeal

to mankind. [It is doubted whether I thought all last night, or no; the question being about a matter of fact, it is begging it to bring as a proof for it an hypothesis which is the very thing in dispute; by which way one may prove any thing; and it is but supposing that all watches, whilst the balance beats, think, and it is sufficiently proved, and past doubt, that my watch thought all last night. But he that would not deceive himself ought to build his hypothesis on matter of fact, and make it out by sensible experience, and not presume on matter of fact because of his hypothesis; that is, because he supposes it to be so; which way of proving amounts to this,—that I must necessarily think all last night, because another supposes I always think, though I myself cannot perceive that I always do so.

But men in love with their opinions may not only suppose what is in question, but allege wrong matter of fact. How else could anyone make it an inference of mine, that a thing is not, because we are not sensible of it in our sleep? I do not say, there is no soul in a man because he is not sensible of it in his sleep; but I do say, he cannot think at any time, waking or sleeping, without being sensible of it. Our being sensible of it is not necessary to anything but to our thoughts; and to them it is, and to them it will always be, necessary, till we can think without being conscious of it.]

11. *It is not always conscious of it.*—I grant that the soul in a waking man is never without thought, because it is the condition of being awake; but whether sleeping without dreaming be not an affection of the whole man, mind as well as body, may be worth a waking man's consideration; it being hard to conceive that anything should think and not be conscious of it. If the soul doth think in a sleeping man without being conscious of it, I ask, whether, during such thinking, it has any pleasure or pain, or be capable of happiness or misery? I am sure the man is not, no more than the bed or earth he lies on. For to be happy or miserable without being conscious of it, seems to me utterly inconsistent and impossible. Or if it be possible that the soul can, whilst the body is sleep-

ing, have its thinking, enjoyments, and concerns, its pleasure or pain, apart, which the man is not conscious of, nor partakes in, it is certain that Socrates asleep and Socrates awake is not the same person; but his soul when he sleeps, and Socrates the man, consisting of body and soul, when he is waking, are two persons; since waking Socrates has no knowledge of, or concernment for that happiness or misery of his soul, which it enjoys alone by itself whilst he sleeps, without perceiving any thing of it, no more than he has for the happiness or misery of a man in the Indies, whom he knows not. For if we take wholly away all consciousness of our actions and sensations, especially of pleasure and pain, and the concernment that accompanies it, it will be hard to know wherein to place personal identity. . . .

[In the remainder of this chapter Locke elaborates his argument against this Cartesian "opinion that the soul always thinks." To define the mind as a substance whose whole essence consists in thinking would, on Locke's view, divorce mind from experience and restore the theory of innate ideas done away with in Book I.]

CHAPTER II

OF SIMPLE IDEAS

1. *Uncompounded appearances.*—The better to understand the nature, manner, and extent of our knowledge, one thing is carefully to be observed concerning the ideas we have; and that is, that some of them are *simple,* and some *complex.*

Though the qualities that affect our senses are, in the things themselves, so united and blended that there is no separation, no distance between them; yet it is plain the ideas they produce in the mind enter by the senses simple and unmixed. For though the sight and touch often take in from the same object, at the same time, different ideas—as a man sees at once motion and color, the hand feels softness and warmth in the

same piece of wax—yet the simple ideas thus united in the same subject are as perfectly distinct as those that come in by different senses; the coldness and hardness which a man feels in a piece of ice being as distinct ideas in the mind as the smell and whiteness of a lily, or as the taste of sugar and smell of a rose: and there is nothing can be plainer to a man than the clear and distinct perception he has of those simple ideas; which, being each in itself uncompounded, contains in it nothing but *one uniform appearance or conception in the mind,* and is not distinguishable into different ideas.

2. *The mind can neither make nor destroy them.*—These simple ideas, the materials of all our knowledge, are suggested and furnished to the mind only by those two ways above mentioned, viz., sensation and reflection. When the understanding is once stored with these simple ideas, it has the power to repeat, compare, and unite them, even to an almost infinite variety, and so can make at pleasure new complex ideas. But it is not in the power of the most exalted wit or enlarged understanding, by any quickness or variety of thought, to *invent* or *frame* one new simple idea in the mind, not taken in by the ways before mentioned; nor can any force of the understanding *destroy* those that are there: the dominion of man in this little world of his own understanding, being much-what the same as it is in the great world of visible things; wherein his power, however managed by art and skill, reaches no farther than to compound and divide the materials that are made to his hand but can do nothing towards the making the least particle of new matter, or destroying one atom of what is already in being. The same inability will everyone find in himself, who shall go about to fashion in his understanding any simple idea not received in by his senses from external objects, or by reflection from the operations of his own mind about them. I would have anyone try to fancy any taste which had never affected his palate, or frame the idea of a scent he had never smelt; and when he can do this, I will also conclude that a blind man hath *ideas* of colors, and a deaf man true, distinct notions of sounds.

3. *Only the qualities that affect the senses are imaginable.* —This is the reason why, though we cannot believe it impossible to God to make a creature with other organs, and more ways to convey into the understanding the notice of corporeal things than those five as they are usually counted, which He has given to man; yet I think it is not possible for anyone to imagine any other qualities in bodies, howsoever constituted, whereby they can be taken notice of, besides sounds, tastes, smells, visible and tangible qualities. And had mankind been made with but four senses, the qualities then which are the objects of the fifth sense had been as far from our notice, imagination, and conception, as now any belonging to a sixth, seventh, or eighth sense can possibly be; which, whether yet some other creatures, in some other parts of this vast and stupendous universe, may not have, will be a great presumption to deny. He that will not set himself proudly at the top of all things, but will consider the immensity of this fabric, and the great variety that is to be found in this little and inconsiderable part of it which he has to do with, may be apt to think, that in other mansions of it there may be other and different intelligible beings, of whose faculties he has as little knowledge or apprehension, as a worm shut up in one drawer of a cabinet hath of the senses or understanding of a man; such variety and excellency being suitable to the wisdom and power of the Maker. I have here followed the common opinion of man's having but five senses, though perhaps there may be justly counted more; but either supposition serves equally to my present purpose.

CHAPTER III

OF SIMPLE IDEAS OF SENSE

1. *Division of simple ideas.*—The better to conceive the ideas we receive from sensation, it may not be amiss for us to consider them in reference to the different ways whereby they

make their approaches to our minds, and make themselves perceivable by us.

First, then, there are some which come into our minds *by one sense only.*

Secondly, there are others that convey themselves into the mind *by more senses than one.*

Thirdly, others that are had *from reflection only.*

Fourthly, there are some that make themselves way, and are suggested to the mind, *by all the ways of sensation and reflection.*

We shall consider them apart under these several heads.

There are some ideas which have admittance only through one sense, which is peculiarly adapted to receive them. Thus light and colors, as white, red, yellow, blue, with their several degrees or shades and mixtures, as green, scarlet, purple, sea-green, and the rest, come in only by the eyes; all kinds of noises, sounds, and tones, only by the ears; the several tastes and smells, by the nose and palate. And if these organs, or the nerves which are the conduits to convey them from without to their audience in the brain—the mind's presence-room (as I may so call it)—are, any of them, so disordered as not to perform their functions, they have no postern to be admitted by, no other way to bring themselves into view, and be received by the understanding.

The most considerable of those belonging to the touch are heat, and cold, and solidity; all the rest—consisting almost wholly in the sensible configuration, as smooth and rough; or else more or less firm adhesion of the parts, as hard and soft, tough and brittle—are obvious enough.

2. *Few simple ideas have names.*—I think it will be needless to enumerate all the particular simple ideas belonging to each sense. Nor indeed is it possible if we would, there being a great many more of them belonging to most of the senses than we have names for. The variety of smells, which are as many almost, if not more, than species of bodies in the world, do most of them want names. Sweet and stinking commonly serve our turn for these ideas, which in effect is

little more than to call them pleasing or displeasing; though the smell of a rose and violet, both sweet, are certainly very distinct ideas. Nor are the different tastes that by our palates we receive ideas of, much better provided with names. Sweet, bitter, sour, harsh, and salt, are almost all the epithets we have to denominate that numberless variety of relishes which are to be found distinct, not only in almost every sort of creatures, but in the different parts of the same plant, fruit, or animal. The same may be said of colors and sounds. I shall therefore, in the account of simple ideas I am here giving, content myself to set down only such as are most material to our present purpose, or are in themselves less apt to be taken notice of, though they are very frequently the ingredients of our complex ideas; amongst which I think I may well account solidity, which therefore I shall treat of in the next chapter.

CHAPTER IV

IDEA OF SOLIDITY

1. *We receive this idea from touch.*—The idea of *solidity* we receive by our touch; and it arises from the resistance which we find in body to the entrance of any other body into the place it possesses, till it has left it. There is no idea which we receive more constantly from sensation than solidity. Whether we move or rest, in what posture soever we are, we always feel something under us that supports us, and hinders our farther sinking downwards; and the bodies which we daily handle make us perceive that whilst they remain between them, they do, by an insurmountable force, hinder the approach of the parts of our hands that press them. *That which thus hinders the approach of two bodies, when they are moving one towards another, I call solidity.* I will not dispute whether this acceptation of the word solid be nearer to its original signification than that which mathematicians use it in; it suffices that, I think, the common notion of solidity,

will allow, if not justify, this use of it; but if any one think it better to call it *impenetrability,* he has my consent. Only I have thought the term solidity the more proper to express this idea, not only because of its vulgar use in that sense, but also because it carries something more of positive in it than impenetrability, which is negative, and is, perhaps, more a consequence of solidity than solidity itself. This, of all other, seems the idea most intimately connected with and essential to body, so as nowhere else to be found or imagined but only in matter; and though our senses take no notice of it but in masses of matter, of a bulk sufficient to cause a sensation in us; yet the mind, having once got this idea from such grosser sensible bodies, traces it farther and considers it, as well as figure, in the minutest particle of matter that can exist, and finds it inseparably inherent in body, wherever or however modified.

2. *Solidity fills space.*—This is the idea which belongs to body, whereby we conceive it to fill space. The idea of which filling of space is, that where we imagine any space taken up by a solid substance, we conceive it so to possess it that it excludes all other solid substances, and will for ever hinder any two other bodies, that move towards one another in a straight line, from coming to touch one another, unless it removes from between them in a line not parallel to that which they move in. This idea of it, the bodies which we ordinarily handle sufficiently furnish us with.

3. *Distinct from space.*—This resistance, whereby it keeps other bodies out of the space which it possesses, is so great that no force, how great soever, can surmount it. All the bodies in the world, pressing a drop of water on all sides, will never be able to overcome the resistance which it will make, as soft as it is, to their approaching one another, till it be removed out of their way: whereby our idea of solidity is distinguished both from pure space, which is capable neither of resistance nor motion, and from the ordinary idea of hardness. For a man may conceive two bodies at a distance so as they may approach one another without touching or displac-

ing any solid thing till their superficies come to meet; whereby, I think, we have the clear idea of space without solidity. For (not to go so far as annihilation of any particular body), I ask, whether a man cannot have the idea of the motion of one single body alone, without any other succeeding immediately into its place? I think it is evident he can: the idea of motion in one body no more including the idea of motion in another, than the idea of a square figure in one body includes the idea of a square figure in another. I do not ask, whether bodies do so *exist,* that the motion of one body cannot really be without the motion of another. To determine this either way is to beg the question for or against a *vacuum.* But my question is, whether one cannot have the idea of one body moved, whilst others are at rest? And I think this no one will deny. If so, then the place it deserted gives us the idea of pure space without solidity, whereinto another body may enter without either resistance or protrusion of any thing. When the sucker in a pump is drawn, the space it filled in the tube is certainly the same, whether any other body follows the motion of the sucker or not; nor does it imply a contradiction that upon the motion of one body, another that is only contiguous to it should not follow it. The necessity of such a motion is built only on the supposition that the world is full, but not on the distinct ideas of space and solidity; which are as different as resistance and not-resistance, protrusion and not-protrusion. And that men have ideas of space without body, their very disputes about a vacuum plainly demonstrate, as is showed in another place.

4. *Distinct from hardness.*—Solidity is hereby also differenced from *hardness,* in that solidity consists in repletion, and so an utter exclusion of other bodies out of the space it possesses; but hardness, in a firm cohesion of the parts of matter, making up masses of a sensible bulk, so that the whole does not easily change its figure. And, indeed, hard and soft are names that we give to things only in relation to the constitutions of our own bodies; that being generally called hard by us which will put us to pain sooner than change figure by

the pressure of any part of our bodies; and that, on the contrary, soft which changes the situation of its parts upon an easy and unpainful touch.

But this difficulty of changing the situation of the sensible parts amongst themselves, or of the figure of the whole, gives no more solidity to the hardest body in the world than to the softest; nor is an adamant one jot more solid than water. For though the two flat sides of two pieces of marble will more easily approach each other, between which there is nothing but water or air, than if there be a diamond between them; yet it is not that the parts of the diamond are more solid than those of water, or resist more, but because the parts of water being more easily separable from each other, they will by a side-motion be more easily removed and give way to the approach of two pieces of marble: but if they could be kept from making place by that side-motion, they would eternally hinder the approach of these two pieces of marble as much as the diamond; and it would be as impossible by any force to surmount their resistance, as to surmount the resistance of the parts of a diamond. The softest body in the world will as invincibly resist the coming together of any two other bodies, if it be not put out of the way, but remain between them, as the hardest that can be found or imagined. He that shall fill a yielding soft body well with air or water will quickly find its resistance: and he that thinks that nothing but bodies that are hard can keep his hands from approaching one another, may be pleased to make a trial with the air enclosed in a football. [The[1] experiment, I have been told, was made at Florence, with a hollow globe of gold filled with water, and exactly closed, which farther shows the solidity of so soft a body as water. For, the golden globe thus filled being put into a press which was driven by the extreme force of screws, the water made itself way through the pores of that very close metal, and, finding no room for a nearer approach of its particles within, got to the outside, where it rose like a dew, and so fell in drops before the sides of the globe could

[1]Added in the second edition.

be made to yield to the violent compression of the engine that squeezed it.]

5. *On solidity depend impulse, resistance, and protrusion.* —By this idea of solidity is the extension of body distinguished from the extension of space: the extension of body being nothing but the cohesion or continuity of solid, separable, movable parts; and the extension of space, the continuity of unsolid, inseparable, and immovable parts. Upon the solidity of bodies also depend their mutual impulse, resistance, and protrusion. Of pure space, then, and solidity, there are several (amongst which I confess myself one) who persuade themselves they have clear and distinct ideas; and that they can think on space without anything in it that resists or is protruded by body. This is the idea of pure space, which they think they have as clear as any idea they can have of the extension of body: the idea of the distance between the opposite parts of a concave superficies being equally as clear without as with the idea of any solid parts between; and on the other side they persuade themselves that they have, distinct from that of pure space, the idea of something that fills space, that can be protruded by the impulse of other bodies, or resist their motion. If there be others that have not these two ideas distinct, but confound them, and make but one of them, I know not how men who have the same idea under different names, or different ideas under the same name, can in that case talk with one another, any more than a man who, not being blind or deaf, has distinct ideas of the color of scarlet and the sound of a trumpet, would discourse concerning scarlet-color with the blind man I mention in another place, who fancied that the idea of scarlet was like the sound of a trumpet.

6. *What solidity is.*—If anyone asks me what this solidity is, I send him to his senses to inform him. Let him put a flint or a football between his hands, and then endeavor to join them, and he will know. If he thinks this not a sufficient explication of solidity, what it is, and wherein it consists, I promise to tell him what it is and wherein it consists, when he

tells me what thinking is or wherein it consists; or explains to me what extension or motion is, which perhaps seems much easier. The simple ideas we have are such as experience teaches them us; but if, beyond that, we endeavor by words to make them clearer in the mind, we shall succeed no better than if we went about to clear up the darkness of a blind man's mind by talking, and to discourse into him the ideas of light and colors. The reason of this I shall show in another place.

CHAPTER V

OF SIMPLE IDEAS OF DIVERS SENSES

Ideas received both by seeing and touching.—The ideas we get by more than one sense are of *space* or *extension, figure, rest* and *motion.* For these make perceivable impressions both on the eyes and touch; and we can receive and convey into our minds the ideas of the extension, figure, motion, and rest of bodies, both by seeing and feeling. But by having occasion to speak more at large of these in another place, I here only enumerate them.

CHAPTER VI

OF SIMPLE IDEAS OF REFLECTION

1. *Simple ideas of reflection are the operations of the mind about its other ideas.*—The mind, receiving the ideas mentioned in the foregoing chapters from without, when it turns its view inward upon itself, and observes its own actions about those ideas it has, takes from thence other ideas, which are as capable to be the objects of its contemplation as any of those it received from foreign things.

2. *The idea of perception, and idea of willing, we have from reflection.*—The two great and principal actions of the

mind, which are most frequently considered, and which are so frequent that every one that pleases may take notice of them in himself, are these two: *perception* or *thinking,* and *volition* or *willing.* [The power of thinking is called the *understanding,* and the power of volition is called the *will;* and these two powers or abilities in the mind are denominated *faculties.*] Of some of the models of these simple ideas of reflection, such as are remembrance, discerning, reasoning, judging, knowledge, faith, etc., I shall have occasion to speak hereafter.

CHAPTER VII

OF SIMPLE IDEAS OF BOTH SENSATION AND REFLECTION

1. *Ideas of pleasure and pain.*—There be other simple ideas which convey themselves into the mind by all the ways of sensation and reflection: viz., pleasure or delight, and its opposite, pain or uneasiness; power, existence, unity.

2. Delight or uneasiness, one or other of them, join themselves to almost all our ideas both of sensation and reflection; and there is scarce any affection of our senses from without, any retired thought of our mind within, which is not able to produce in us pleasure or pain. By pleasure and pain, I would be understood to signify whatsoever delights or molests us; whether it arises from the thoughts of our minds, or any thing operating on our bodies. For whether we call it satisfaction, delight, pleasure, happiness, etc., on the one side; or uneasiness, trouble, pain, torment, anguish, misery, etc., on the other; they are still but different degrees of the same thing, and belong to the ideas of pleasure and pain, delight or uneasiness; which are the names I shall most commonly use for those two sorts of ideas.

3. *Pleasure and pain as motive for our actions.*—The infinite wise Author of our being—having given us the power over several parts of our bodies, to move or keep them at rest as

we think fit, and also by the motion of them to move ourselves and other contiguous bodies, in which consist all the actions of our body; having also given a power to our minds, in several instances, to choose amongst its ideas which it will think on, and to pursue the inquiry of this or that subject with consideration and attention—to excite us to these actions of thinking and motion that we are capable of, has been pleased to join to several thoughts and several sensations a perception of *delight*. If this were wholly separated from all our outward sensations and inward thoughts, we should have no reason to prefer one thought or action to another, negligence to attention, or motion to rest: and so we should neither stir our bodies, nor employ our minds; but let our thoughts (if I may so call it) run adrift, without any direction or design; and suffer the ideas of our minds, like unregarded shadows, to make their appearances there as it happened, without attending to them: in which state man, however furnished with the faculties of understanding and will, would be a very idle, unactive creature, and pass his time only in a lazy, lethargic dream. It has therefore pleased our wise Creator to annex to several objects, and to the ideas which we receive from them, as also to several of our thoughts, a concomitant pleasure, and that in several objects to several degrees, that those faculties which He had endowed us with might not remain wholly idle and unemployed by us.

4. *An end and use of pain.*—Pain has the same efficacy and use to set us on work that pleasure has, we being as ready to employ our faculties to avoid that, as to pursue this: only this is worth our consideration, that pain is often produced by the same objects and ideas that produce pleasure in us. This their near conjunction, which makes us often feel pain in the sensations where we expected pleasure, gives us new occasion of admiring the wisdom and goodness of our Maker, who, designing the preservation of our being, has annexed pain to the application of many things to our bodies, to warn us of the harm that they will do, and as advices to withdraw from them. But He, not designing our preservation barely,

but the preservation of every part and organ in its perfection, hath in many cases annexed pain to those very ideas which delight us. Thus heat, that is very agreeable to us in one degree, by a little greater increase of it proves no ordinary torment; and the most pleasant of all sensible objects, light itself, if there be too much of it, if increased beyond a due proportion to our eyes, causes a very painful sensation: which is wisely and favorably so ordered by nature, that when any object does by the vehemency of its operation disorder the instruments of sensation, whose structures cannot but be very nice and delicate, we might by the pain be warned to withdraw before the organ be quite put out of order, and so be unfitted for its proper functions for the future. The consideration of those objects that produce it may well persuade us that this is the end or use of pain. For though great light be insufferable to our eyes, yet the highest degree of darkness does not at all disease them, because that causing no disorderly motion in it, leaves that curious organ unharmed in its natural state. But yet excess of cold as well as heat pains us because it is equally destructive to that temper which is necessary to the preservation of life, and the exercise of the several functions of the body, and which consists in a moderate degree of warmth, or, if you please, a motion of the insensible parts of our bodies confined within certain bounds.

5. Beyond all this, we may find another reason why God hath scattered up and down several degrees of pleasure and pain in all the things that environ and affect us, and blended them together in all that our thoughts and senses have to do with; that we, finding imperfection, dissatisfaction, and want of complete happiness in all the enjoyments which the creatures can afford us, might be led to seek it in the enjoyment of Him "with Whom there is fulness of joy, and at Whose right hand are pleasures for evermore."

6. Though what I have here said may not perhaps make the ideas of pleasure and pain clearer to us than our own experience does, which is the only way that we are capable of having them; yet the consideration of the reason why they are

annexed to so many other ideas, serving to give us due sentiments of the wisdom and goodness of the Sovereign Disposer of all things, may not be unsuitable to the main end of these inquiries: the knowledge and veneration of Him being the chief end of all our thoughts, and the proper business of all our understandings.

7. *Ideas of existence and unity.*—Existence and unity are two other ideas that are suggested to the understanding by every object without, and every idea within. When ideas are in our minds, we consider them as being actually there, as well as we consider things to be actually without us: which is, that they exist, or have existence: and whatever we can consider as one thing, whether a real being or idea, suggests to the understanding the idea of unity.

8. *Idea of power.*—Power also is another of those simple ideas which we receive from sensation and reflection. For, observing in ourselves that we do and can think, and that we can at pleasure move several parts of our bodies which were at rest; the effects also that natural bodies are able to produce in one another occurring every moment to our senses, we both these ways get the idea of power.

9. *Idea of succession.*—Besides these there is another idea, which though suggested by our senses, yet is more constantly offered us by what passes in our minds; and that is the idea of succession. For if we look immediately into ourselves, and reflect on what is observable there, we shall find our ideas always, whilst we are awake or have any thought, passing in train, one going and another coming without intermission.

10. *Simple ideas the materials of all our knowledge.*—These, if they are not all, are at least (as I think) the most considerable of those simple ideas which the mind has, and out of which is made all its other knowledge: all of which it receives only by the two forementioned ways of sensation and reflection.

Nor let anyone think these too narrow bounds for the capacious mind of man to expatiate in, which takes its flight

farther than the stars, and cannot be confined by the limits of the world; that extends its thoughts often even beyond the utmost expansion of matter, and makes excursions into that incomprehensible inane. I grant all this; but desire anyone to assign any simple idea which is not received from one of those inlets before mentioned, or any complex idea not made out of those simple ones. Nor will it be so strange to think these few simple ideas sufficient to employ the quickest thought or largest capacity, and to furnish the materials of all that various knowledge and more various fancies and opinions of all mankind, if we consider how many words may be made out of the various composition of twenty-four letters; or, if, going one step farther, we will but reflect on the variety of combinations that may be made with barely one of the above-mentioned ideas, viz., number, whose stock is inexhaustible and truly infinite; and what a large and immense field doth extension alone afford the mathematicians!

CHAPTER VIII

SOME FARTHER CONSIDERATIONS CONCERNING OUR SIMPLE IDEAS OF SENSATION

1. *Positive ideas from privative causes.*—Concerning the simple ideas of sensation, it is to be considered that whatsoever is so constituted in nature as to be able by affecting our senses to cause any perception in the mind, doth thereby produce in the understanding a simple idea; which, whatever be the external cause of it, when it comes to be taken notice of by our discerning faculty, it is by the mind looked on and considered there to be a real positive idea in the understanding, as much as any other whatsoever; though perhaps the cause of it be but a privation in the subject.

2. Thus the ideas of heat and cold, light and darkness, white and black, motion and rest, are equally clear and positive ideas in the mind; though perhaps some of the causes

which produce them are barely privations in those subjects from whence our senses derive those ideas. These the understanding, in its view of them, considers all as distinct positive ideas without taking notice of the causes that produce them; which is an inquiry not belonging to the idea as it is in the understanding, but to the nature of the things existing without us. These are two very different things, and carefully to be distinguished; it being one thing to perceive and know the idea of white or black, and quite another to examine what kind of particles they must be, and how ranged in the superficies, to make any object appear white or black.

3. A painter or dyer who never inquired into their causes, hath the ideas of white and black and other colors as clearly, perfectly, and distinctly in his understanding, and perhaps more distinctly than the philosopher who hath busied himself in considering their natures, and thinks he knows how far either of them is in its cause positive or privative; and the idea of black is no less positive in his mind than that of white, however the cause of that color in the external object may be only a privation.

4. If it were the design of my present undertaking to inquire into the natural causes and manner of perception, I should offer this as a reason why a privative cause might, in some cases at least, produce a positive idea; viz., that all sensation being produced in us only by different degrees and modes of motion in our animal spirits, variously agitated by external objects, the abatement of any former motion must as necessarily produce a new sensation as the variation or increase of it; and so introduce a new idea, which depends only on a different motion of the animal spirits in that organ.

5. But whether this be so or not I will not here determine, but appeal to everyone's own experience, whether the shadow of a man, though it consists of nothing but the absence of light (and the more the absence of light is, the more discernible is the shadow), does not, when a man looks on it, cause as clear and positive an idea in his mind as a man himself, though covered over with clear sunshine! And the picture

of a shadow is a positive thing. Indeed, we have negative names, [which stand not directly for positive ideas, but for their absence, such as *insipid, silence, nihil,* etc., which words denote positive ideas, v. g., *taste, sound, being,* with a signification of their absence].

6. And thus one may truly be said to see darkness. For, supposing a hole perfectly dark, from whence no light is reflected, it is certain one may see the figure of it, or it may be painted; or whether the ink I write with make any other idea, is a question. The privative causes I have here assigned of positive ideas are according to the common opinion; but, in truth, it will be hard to determine whether there be really any ideas from a privative cause, till it be determined whether rest be any more a privation than motion.

7. *Ideas in the mind, qualities in bodies.*—To discover the nature of our ideas the better, and to discourse of them intelligibly, it will be convenient to distinguish them, as they are *ideas or perceptions in our minds,* and as they are *modifications of matter in the bodies that cause such perceptions in us;* that so we may not think (as perhaps usually is done) that they are exactly the images and resemblances of something inherent in the subject; most of those of sensation being in the mind no more the likeness of something existing without us than the names that stand for them are the likeness of our ideas, which yet upon hearing they are apt to excite in us.

8. Whatsoever the mind perceives in itself, or is the immediate object of perception, thought, or understanding, that I call *idea;* and the power to produce any idea in our mind, I call *quality* of the subject wherein that power is. Thus a snowball having the power to produce in us the ideas of white, cold, and round, the powers to produce those ideas in us as they are in the snowball, I call qualities; and as they are sensations or perceptions in our understandings, I call them ideas; which ideas, if I speak of them sometimes as in the things themselves, I would be understood to mean those qualities in the objects which produce them in us.

9. *Primary qualities.*—[Qualities thus considered in bodies are: *First,* such as are utterly inseparable from the body, in what estate soever it be;] and such as, in all the alterations and changes it suffers, all the force can be used upon it, it constantly keeps; and such as sense constantly finds in every particle of matter which has bulk enough to be perceived, and the mind finds inseparable from every particle of matter, though less than to make itself singly be perceived by our senses: v. g., take a grain of wheat, divide it into two parts, each part has still solidity, extension, figure, and mobility; divide it again, and it retains still the same qualities: and so divide it on till the parts become insensible, they must retain still each of them all those qualities. For, division (which is all that a mill or pestle or any other body does upon another, in reducing it to insensible parts) can never take away either solidity, extension, figure, or mobility from any body, but only makes two or more distinct separate masses of matter of that which was but one before; all which distinct masses, reckoned as so many distinct bodies, after division, make a certain number. [These I call *original* or *primary qualities* of body, which I think we may observe to produce simple ideas in us, viz., solidity, extension, figure, motion or rest, and number.

10. *Secondary qualities.*—*Secondly,* such qualities, which in truth are nothing in the objects themselves, but powers to produce various sensations in us by their primary qualities, i. e., by the bulk, figure, texture, and motion of their insensible parts, as colors, sounds, tastes, etc., these I call *secondary* qualities. To these might be added a third sort, which are allowed to be barely powers, though they are as much real qualities in the subject as those which I, to comply with the common way of speaking, call qualities, but, for distinction, *secondary* qualities. For, the power in fire to produce a new color or consistency in wax or clay, by its primary qualities, is as much a quality in fire as the power it has to produce in me a new idea or sensation of warmth or burning, which I felt not before, by the same primary

qualities, viz., the bulk, texture, and motion of its insensible parts.]

11. [*How primary qualities produce ideas in us.*—The next thing to be considered is, how bodies produce ideas in us; and that is manifestly by impulse, the only way which we can conceive bodies to operate in.]

12. If, then, external objects be not united to our minds when they produce ideas therein, and yet we perceive these original qualities in such of them as singly fall under our senses, it is evident that some motion must be thence continued by our nerves, or animal spirits, by some parts of our bodies, to the brains or the seat of sensation, there to produce in our minds the particular ideas we have of them. And since the extension, figure, number, and motion of bodies of an observable bigness, may be perceived at a distance by the sight, it is evident some singly imperceptible bodies must come from them to the eyes, and thereby convey to the brain some motion which produces these ideas which we have of them in us.

13. *How secondary.*—After the same manner that the ideas of these original qualities are produced in us, we may conceive that the ideas of secondary qualities are also produced, viz., by the operation of insensible particles on our senses. For it being manifest that there are bodies, and good store of bodies, each whereof are so small that we cannot by any of our senses discover either their bulk, figure, or motion (as is evident in the particles of the air and water, and others extremely smaller than those, perhaps as much smaller than the particles of air or water as the particles of air or water are smaller than peas or hailstones): let us suppose at present that the different motions and figures, bulk and number, of such particles, effecting the several organs of our senses, produce in us those different sensations which we have from the colors and smells of bodies, v. g., that a violet, by the impulse of such insensible particles of matter of peculiar figures and bulks, and in different degrees and modifications of their motions, causes the ideas of the blue color and sweet scent

of that flower to be produced in our minds; it being no more impossible to conceive that God should annex such ideas to such motions, with which they have no similitude, than that He should annex the idea of pain to the motion of a piece of steel dividing our flesh, with which the idea hath no resemblance.

14. What I have said concerning colors and smells may be understood also of tastes and sounds, and other the like sensible qualities; which, whatever reality we by mistake attribute to them, are in truth nothing in the objects themselves, but powers to produce various sensations in us, and depend on those primary qualities, viz., bulk, figure, texture, and motion of parts [as I have said].

15. *Ideas of primary qualities are resemblances; of secondary, not.*—From whence I think it is easy to draw this observation, that the ideas of primary qualities of bodies are resemblances of them, and their patterns do really exist in the bodies themselves; but the ideas produced in us by these secondary qualities have no resemblance of them at all. There is nothing like our ideas existing in the bodies themselves. They are, in the bodies we denominate from them, only a power to produce those sensations in us; and what is sweet, blue, or warm in idea, is but the certain bulk, figure, and motion of the insensible parts in the bodies themselves, which we call so.

16. Flame is denominated hot and light; snow, white and cold; and manna, white and sweet, from the ideas they produce in us, which qualities are commonly thought to be the same in those bodies that those ideas are in us, the one the perfect resemblance of the other, as they are in a mirror; and it would by most men be judged very extravagant, if one should say otherwise. And yet he that will consider that the same fire that at one distance produces in us the sensation of warmth, does at a nearer approach produce in us the far different sensation of pain, ought to bethink himself what reason he has to say, that this idea of warmth which was produced in him by the fire, is actually in the fire, and his idea

of pain which the same fire produced in him the same way is not in the fire. Why are whiteness and coldness in snow and pain not, when it produces the one and the other idea in us, and can do neither but by the bulk, figure, number, and motion of its solid parts?

17. The particular bulk, number, figure, and motion of the parts of fire or snow are really in them, whether anyone's senses perceive them or no; and therefore they may be called *real* qualities, because they really exist in those bodies. But light, heat, whiteness, or coldness, are no more really in them than sickness or pain is in manna. Take away the sensation of them; let not the eyes see light or colors, nor the ears hear sounds; let the palate not taste, nor the nose smell; and all colors, tastes, odors, and sounds, as they are such particular ideas, vanish and cease, and are reduced to their causes, i. e., bulk, figure, and motion of parts.

18. A piece of manna of a sensible bulk is able to produce in us the idea of a round or square figure; and, by being removed from one place to another, the idea of motion. This idea of motion represents it as it really is in the manna moving; a circle or square are the same, whether in idea or existence, in the mind or in the manna; and this, both motion and figure, are really in the manna, whether we take notice of them or no: this every body is ready to agree to. Besides, manna, by the bulk, figure, texture, and motion of its parts, has a power to produce the sensations of sickness, and sometimes of acute pains or gripings, in us. That these ideas of sickness and pain are not in the manna, but effects of its operations on us, and are nowhere when we feel them not; this also everyone readily agrees to. And yet men are hardly to be brought to think that sweetness and whiteness are not really in manna, which are but the effects of the operations of manna by the motion, size, and figure of its particles on the eyes and palate; as the pain and sickness caused by manna, are confessedly nothing but the effects of its operations on the stomach and guts by the size, motion, and figure of its insensible parts (for by nothing else can a body operate, as has

been proved): as if it could not operate on the eyes and palate, and thereby produce in the mind particular distinct ideas which in itself it has not, as well as we allow it can operate on the guts and stomach, and thereby produce distinct ideas which in itself it has not. These ideas being all effects of the operations of manna on several parts of our bodies, by the size, figure, number, and motion of its parts, why those produced by the eyes and palate should rather be thought to be really in the manna than those produced by the stomach and guts; or why the pain and sickness, ideas that are the effects of manna, should be thought to be nowhere when they are not felt; and yet the sweetness and whiteness, effects of the same manna on other parts of the body, by ways equally as unknown, should be thought to exist in the manna, when they are not seen nor tasted would need some reason to explain.

19. Let us consider the red and white colors in porphyry; hinder light but from striking on it, and its colors vanish; it no longer produces any such ideas in us. Upon the return of light, it produces these appearances on us again. Can any one think any real alterations are made in the porphyry by the presence or absence of light, and that those ideas of whiteness and redness are really in porphyry in the light, when it is plain it has no color in the dark? It has indeed such a configuration of particles, both night and day, as are apt, by the rays of light rebounding from some parts of that hard stone, to produce in us the idea of redness, and from others the idea of whiteness. But whiteness or redness are not in it at any time, but such a texture that hath the power to produce such a sensation in us.

20. Pound an almond, and the clear white color will be altered into a dirty one, and the sweet taste into an oily one. What real alteration can the beating of the pestle make in any body, but an alteration of the texture of it?

21. Ideas being thus distinguished and understood, we may be able to give an account how the same water, at the same time, may produce the idea of cold by one hand, and of

heat by the other; whereas it is impossible that the same water, if those ideas were really in it, should at the same time be both hot and cold. For if we imagine warmth as it is in our hands, to be nothing but a certain sort and degree of motion in the minute particles of our nerves or animal spirits, we may understand how it is possible that the same water may at the same time produce the sensation of heat in one hand, and cold in the other; which yet figure never does, that never producing the idea of a square by one hand which has produced the idea of a globe by another. But if the sensation of heat and cold be nothing but the increase or diminution of the motion of the minute parts of our bodies, caused by the corpuscles of any other body, it is easy to be understood that if that motion be greater in one hand than in the other, if a body be applied to the two hands, which has in its minute particles a greater motion than in those of one of the hands, and a less than in those of the other, it will increase the motion of the one hand, and lessen it in the other, and so cause the different sensations of heat and cold that depend thereon.

22. I have, in what just goes before, been engaged in physical inquiries a little farther than perhaps I intended. But it being necessary to make the nature of sensation a little understood, and to make the difference between the qualities in bodies, and the ideas produced by them in the mind, to be distinctly conceived, without which it were impossible to discourse intelligibly of them, I hope I shall be pardoned this little excursion into natural philosophy, it being necessary in our present inquiry to distinguish the primary and real qualities of bodies, which are always in them, (viz., solidity, extension, figure, number, and motion or rest, and are sometimes perceived by us, viz., when the bodies they are in are big enough singly to be discerned), from those secondary and imputed qualities, which are but the powers of several combinations of those primary ones, when they operate without being distinctly discerned; whereby we also may come to know what ideas are, and what are not, resemblances of something really existing in the bodies we denominate from them.

23. *Three sorts of qualities in bodies.*—The qualities then that are in bodies, rightly considered, are of three sorts:

First, the bulk, figure, number, situation, and motion or rest of their solid parts; those are in them, whether we perceive them or not; and when they are of that size that we can discover them, we have by these ideas of the thing as it is in itself, as is plain in artificial things. These I call *primary qualities.*

Secondly, the power that is in any body, by reason of its insensible primary qualities, to operate after a peculiar manner on any of our senses, and thereby produce in us the different ideas of several colors, sounds, smells, tastes, etc. These are usually called *sensible qualities.*

Thirdly, the power that is in any body, by reason of the particular constitution of its primary qualities, to make such a change in the bulk, figure, texture, and motion of another body, as to make it operate on our senses differently from what it did before. Thus the sun has a power to make wax white, and fire, to make lead fluid. [These are usually called *powers.*]

The first of these, as has been said, I think may be properly called real, original, or primary qualities, because they are in the things themselves, whether they are perceived or no; and upon their different modifications it is that the secondary qualities depend.

The other two are only powers to act differently upon other things, which powers result from the different modifications of those primary qualities.

24. *The first are resemblances; the second thought resemblances, but are not; the third neither are, nor are thought so.*—But though these two latter sorts of qualities are powers barely, and nothing but powers, relating to several other bodies, and resulting from the different modifications of the original qualities, yet they are generally otherwise thought of. For the second sort, viz., the powers to produce several ideas in us by our senses, are looked upon as real qualities in the things thus affecting us; but the third sort are called

and esteemed barely powers. V. g., the idea of heat or light which we receive by our eyes or touch from the sun, are commonly thought real qualities existing in the sun, and something more than mere powers in it. But when we consider the sun in reference to wax, which it melts or blanches, we look upon the whiteness and softness produced in the wax, not as qualities in the sun, but effects produced by powers in it: whereas, if rightly considered, these qualities of light and warmth, which are perceptions in me when I am warmed or enlightened by the sun, are no otherwise in the sun than the changes made in the wax, when it is blanched or melted, are in the sun. They are all of them equally powers in the sun, depending on its primary qualities, whereby it is able in the one case so to alter the bulk, figure, texture, or motion of some of the insensible parts of my eyes or hands as thereby to produce in me the idea of light or heat, and in the other it is able so to alter the bulk, figure, texture, or motion of the insensible parts of the wax as to make them fit to produce in me the distinct ideas of white and fluid.

25. The reason why the one are ordinarily taken for real qualities, and the other only for bare powers, seems to be because the ideas we have of distinct colors, sounds, etc., containing nothing at all in them of bulk, figure, or motion, we are not apt to think them the effects of these primary qualities which appear not, to our senses, to operate in their production, and with which they have not any apparent congruity, or conceivable connection. Hence it is that we are so forward to imagine that those ideas are the resemblances of something really existing in the objects themselves, since sensation discovers nothing of bulk, figure, or motion of parts, in their production, nor can reason show how bodies by their bulk, figure, and motion, should produce in the mind the ideas of blue or yellow, etc. But, in the other case, in the operations of bodies changing the qualities one of another, we plainly discover that the quality produced hath commonly no resemblance with anything in the thing producing it; wherefore we look on it as a bare effect of power. For

though, receiving the idea of heat or light from the sun, we are apt to think it is a perception and resemblance of such a quality in the sun, yet when we see wax, or a fair face, receive change of color from the sun, we cannot imagine that to the perception or resemblance of anything in the sun, because we find not those different colors in the sun itself. For, our senses being able to observe a likeness or unlikeness of sensible qualities in two different external objects, we forwardly enough conclude the production of any sensible quality in any subject to be an effect of bare power, and not the communication of any quality which was really in the efficient, when we find no such sensible quality in the thing that produced it. But our senses not being able to discover any unlikeness between the idea produced in us and the quality of the object producing it, we are apt to imagine that our ideas are resemblances of something in the objects, and not the effects of certain powers placed in the modification of their primary qualities, with which primary qualities the ideas produced in us have no resemblance.

26. *Secondary qualities twofold: first, immediately perceivable; secondly, mediately perceivable.*—To conclude: Beside those before-mentioned primary qualities in bodies, viz., bulk, figure, extension, number, and motion of their solid parts, all the rest whereby we take notice of bodies and distinguish them one from another, are nothing else but several powers in them depending on those primary qualities, whereby they are fitted, either by immediately operating on our bodies, to produce several different ideas in us; or else by operating on other bodies, so to change their primary qualities as to render them capable of producing ideas in us different from what before they did. The former of these, I think, may be called secondary qualities *immediately perceivable;* the latter, secondary qualities *mediately perceivable.*

CHAPTER IX

OF PERCEPTION

1. *Perception the first simple idea of reflection.*—Perception, as it is the first faculty of the mind exercised about our ideas, so it is the first and simplest idea we have from reflection, and is by some called 'thinking' in general. Though thinking, in the propriety of the English tongue, signifies that sort of operation of the mind about its ideas wherein the mind is active; where it, with some degree of voluntary attention, considers any thing. For in bare, naked perception, the mind is, for the most part, only passive; and what it perceives it cannot avoid perceiving.

2. *Reflection alone can give us the idea of what perception is.*—What perception is, everyone will know better by reflecting on what he does himself, when he sees, hears, feels, etc., or thinks, than by any discourse of mine. Whoever reflects on what passes in his own mind, cannot miss it; and if he does not reflect, all the words in the world cannot make him have any notion of it.

3. This is certain, that whatever alterations are made in the body, if they reach not the mind; whatever impressions are made on the outward parts, if they are not taken notice of within; there is no perception. Fire may burn our bodies with no other effect than it does a billet, unless the motion be continued to the brain, and there the sense of heat or idea of pain be produced in the mind, wherein consists actual perception.

4. *Impulse on the organ insufficient.*—How often may a man observe in himself, that whilst his mind is intently employed in the contemplation of some objects, and curiously surveying some ideas that are there, it takes no notice of impressions of sounding bodies made upon the organ of hearing with the same alteration that uses to be for the producing the idea of sound! A sufficient impulse there may be on the organ; but it not reaching the observation of the mind, there

follows no perception: and though the motion that uses to produce the idea of sound be made in the ear, yet no sound is heard. Want of sensation in this case is not through any defect in the organ, or that the man's ears are less affected than at other times when he does hear; but that which uses to produce the idea, though conveyed in by the usual organ, not being taken notice of in the understanding, and so imprinting no idea on the mind, there follows no sensation. So that wherever there is sense or perception, there some idea is actually produced, and present in the understanding.

5. *Children, though they may have ideas in the womb, have none innate.*—Therefore, I doubt not but children, by the exercise of their senses about objects that affect them in the womb, receive some few ideas before they are born, as the unavoidable effects either of the bodies that environ them, or else of those wants or diseases they suffer; amongst which (if one may conjecture concerning things not very capable of examination) I think the ideas of hunger and warmth are two, which probably are some of the first that children have, and which they scarce ever part with again.

6. But though it be reasonable to imagine that children receive some ideas before they come into the world, yet these simple ideas are far from those innate principles which some contend for, and we above have rejected. These here mentioned, being the effects of sensation, are only from some affections of the body which happen to them there, and so depend on something exterior to the mind; no otherwise differing in their manner of production from other ideas derived from sense, but only in the precedency of time. Whereas those innate principles are supposed to be quite of another nature, not coming into the mind by any accidental alterations in or operations on the body; but, as it were, original characters impressed upon it in the very first moment of its being and constitution.

7. *Which ideas appear first, is not evident, nor important.*—As there are some ideas which we may reasonably suppose may be introduced into the minds of children in the womb,

subservient to the necessities of their life and being there; so after they are born those ideas are the earliest imprinted which happen to be the sensible qualities which first occur to them: amongst which, light is not the least considerable, nor of the weakest efficacy. And how covetous the mind is to be furnished with all such ideas as have no pain accompanying them, may be a little guessed by what is observable in children new born, who always turn their eyes to that part from whence the light comes, lay them how you please. But the ideas that are most familiar at first being various, according to the divers circumstances of children's first entertainment in the world, the order wherein the several ideas come at first into the mind is very various and uncertain also, neither is it much material to know it.

8. *Ideas of sensation often changed by the judgment.*— We are farther to consider concerning perception, that the ideas we receive by sensation are often in grown people altered by the judgment without our taking notice of it. When we set before our eyes a round globe of any uniform color, v. g., gold, alabaster, or jet, it is certain that the idea thereby imprinted in our mind is of a flat circle variously shadowed, with several degrees of light and brightness coming to our eyes. But we having by use been accustomed to perceive what kind of appearance convex bodies are wont to make in us, what alterations are made in the reflections of light by the difference of the sensible figures of bodies, the judgment presently, by an habitual custom, alters the appearances into their causes; so that, from that which truly is variety of shadow or color collecting the figure, it makes it pass for a mark of figure, and frames to itself the perception of a convex figure and an uniform color; when the idea we receive from thence is only a plane variously colored, as is evident in painting. [To which purpose I shall here insert a problem of that very ingenious and studious promoter of real knowledge, the learned and worthy Mr. Molineux, which he was pleased to send me in a letter some months since: and it is this: "Suppose a man born blind, and now

adult, and taught by his touch to distinguish between a cube and a sphere of the same metal, and nighly of the same bigness, so as to tell, when he felt one and the other, which is the cube, which the sphere. Suppose then the cube and sphere placed on a table, and the blind man to be made to see: *quaere,* whether by his sight, before he touched them, he could now distinguish and tell which is the globe, which the cube?" To which the acute and judicious proposer answers: "Not. For though he has obtained the experience of how a globe, how a cube, affects his touch; yet he has not yet obtained the experience, that what affects his touch so or so, must affect his sight so or so; or that a protuberant angle in the cube, that pressed his hand unequally, shall appear to his eye as it does in the cube." I agree with this thinking gentleman, whom I am proud to call my friend, in his answer to this his problem; and am of opinion that the blind man, at first sight, would not be able with certainty to say which was the globe, which the cube, whilst he only saw them; though he could unerringly name them by his touch, and certainly distinguish them by the difference of their figures felt. This I have set down, and leave with my reader, as an occasion for him to consider how much he may be beholden to experience, improvement, and acquired notions, where he thinks he has not the least use of, or help from them; and the rather, because this observing gentleman farther adds, that having upon the occasion of my book proposed this to divers very ingenious men, he hardly ever met with one that at first gave the answer to it which he thinks true, till by hearing his reasons they were convinced.]

9. *This judgment apt to be mistaken for direct perception.* —But this is not, I think, usual in any of our ideas but those received by sight; because sight, the most comprehensive of all our senses, conveying to our minds the ideas of light and colors, which are peculiar only to that sense; and also the far different ideas of space, figure and motion, the several varieties whereof change the appearances of its proper objects, viz., light and colors; we bring ourselves by use to judge of

the one by the other. This, in many cases, by a settled habit in things whereof we have frequent experience, is performed so constantly and so quick, that we take that for the perception of our sensation which is an idea formed by our judgment; so that one, viz., that of sensation, serves only to excite the other, and is scarce taken notice of itself; as a man who reads or hears with attention and understanding, takes little notice of the characters or sounds, but of the ideas that are excited in him by them.

10. Nor need we wonder that this is done with so little notice, if we consider how very quick the actions of the mind are performed. For as itself is thought to take up no space, to have no extension, so its actions seem to require no time, but many of them seem to be crowded into an instant. I speak this in comparison to the actions of the body. Anyone may easily observe this in his own thoughts who will take the pains to reflect on them. How, as it were in an instant, do our minds with one glance see all the parts of a demonstration which may very well be called a long one, if we consider the time it will require to put it into words, and step by step show it another! Secondly, we shall not be so much surprised that this is done in us with so little notice, if we consider how the facility which we get of doing things, by a custom of doing, makes them often pass in us without our notice. Habits, especially such as are begun very early, come at last to produce actions in us which often escape our observation. How frequently do we in a day cover our eyes with our eye-lids, without perceiving that we are at all in the dark! Men, that by custom have got the use of a by-word, do almost in every sentence pronounce sounds which, though taken notice of by others, they themselves neither hear nor observe. And therefore it is not so strange that our mind should often change the idea of its sensation into that of its judgment, and make one serve only to excite the other, without our taking notice of it. . . .

15. *Perception the inlet of all materials of knowledge.*— Perception, then, being the first step and degree towards

knowledge, and the inlet of all the materials of it, the fewer senses any man as well as any other creature hath, and the fewer and duller the impressions are that are made by them, and the duller the faculties are that are employed about them, the more remote are they from that knowledge which is to be found in some men. But this, being in great variety of degrees (as may be perceived amongst men), cannot certainly be discovered in the several species of animals, much less in their particular individuals. It suffices me only to have remarked here, that perception is the first operation of all our intellectual faculties, and the inlet of all knowledge into our minds. And I am apt, too, to imagine that it is perception in the lowest degree of it which puts the boundaries between animals and the inferior ranks of creatures. But this I mention only as my conjecture by the by, it being indifferent to the matter in hand which way the learned shall determine of it.

CHAPTER X

OF RETENTION

1. *Contemplation.*—The next faculty of the mind, whereby it makes a farther progress towards knowledge, is that which I call retention or the keeping of those simple ideas which from sensation or reflection it hath received. This is done two ways. First, by keeping the idea which is brought into it for some time actually in view, which is called contemplation.

2. *Memory.*—The other way of retention is the power to revive again in our minds those ideas which after imprinting have disappeared, or have been as it were laid aside out of sight; and thus we do, when we conceive heat or light, yellow or sweet, the object being removed. This is memory, which is, as it were, the storehouse of our ideas. For the narrow mind of man, not being capable of having many ideas under view and consideration at once, it was necessary to have a

repository to lay up those ideas, which at another time it might have use of. [But our ideas being nothing but actual perceptions in the mind, which cease to be anything when there is no perception of them, this laying up of our ideas in the repository of the memory signifies no more but this—that the mind has a power, in many cases, to revive perceptions which it has once had, with this additional perception annexed to them, that it has had them before. And in this sense it is that our ideas are said to be in our memories, when indeed they are actually nowhere, but only there is an ability in the mind when it will to revive them again, and, as it were, paint them anew on itself, though some with more, some with less, difficulty; some more lively, and others more obscurely.] And thus it is by the assistance of this faculty that we are said to have all those ideas in our understandings, which though we do not actually contemplate, yet we can bring in sight, and make appear again and be the objects of our thoughts, without the help of those sensible qualities which first imprinted them there.

3. *Attention, repetition, pleasure and pain, fix ideas.*—Attention and repetition help much to the fixing any ideas in the memory; but those which naturally at first make the deepest and most lasting impression, are those which are accompanied with pleasure or pain. The great business of the senses being to make us take notice of what hurts or advantages the body, it is wisely ordered by nature (as has been shown) that pain should accompany the reception of several ideas; which, supplying the place of consideration and reasoning in children, and acting quicker than consideration in grown men, makes both the old and young avoid painful objects with that haste which is necessary for their preservation, and in both settles in the memory a caution for the future.

4. *Ideas fade in the memory.*—Concerning the several degrees of lasting wherewith ideas are imprinted on the memory, we may observe that some of them have been produced in the understanding by an object affecting the senses once only, and

no more than once; [others, that have more than once offered themselves to the senses, have yet been little taken notice of—the mind, either heedless as in children, or otherwise employed as in men, intent only on one thing, not setting the stamp deep into itself; and in some, where they are set on with care and repeated impressions, either] through the temper of the body or some other fault, the memory is very weak. In all these cases, ideas [in the mind] quickly fade, and often vanish quite out of the understanding, leaving no more footsteps or remaining characters of themselves than shadows do flying over fields of corn; and the mind is as void of them as if they never had been there.

5. Thus many of those ideas which were produced in the minds of children in the beginning of their sensation (some of which perhaps, as of some pleasures and pains, were before they were born, and others in their infancy), if in the future course of their lives they are not repeated again, are quite lost, without the least glimpse remaining of them. This may be observed in those who by some mischance have lost their sight when they were very young, in whom the ideas of colors, having been but slightly taken notice of, and ceasing to be repeated, do quite wear out; so that some years after there is no more notion nor memory of colors left in their minds, than in those of people born blind. The memory of some men, it is true, is very tenacious, even to a miracle; but yet there seems to be a constant decay of all our ideas, even of those which are struck deepest, and in minds the most retentive; so that if they be not sometimes renewed by repeated exercise of the senses, or reflection on those kinds of objects which at first occasioned them, the print wears out, and at last there remains nothing to be seen. Thus the ideas, as well as children, of our youth often die before us; and our minds represent to us those tombs to which we are approaching; where though the brass and marble remain, yet the inscriptions are effaced by time, and the imagery moulders away. The pictures drawn in our minds are laid in fading colors; and if not sometimes refreshed, vanish and disappear. How

much the constitution of our bodies [and the make of our animal spirits] are concerned in this; and whether the temper of the brain makes this difference, that in some it retains the characters drawn on it like marble, in others like freestone, and in others little better than sand, I shall not here inquire: though it may seem probable that the constitution of the body does sometimes influence the memory, since we oftentimes find a disease quite strip the mind of all its ideas, and the flames of a fever in a few days calcine all those images to dust and confusion, which seemed to be as lasting as if graved in marble. . . .

8. *Two defects in memory.*—Memory, in an intellectual creature, is necessary in the next degree to perception. It is of so great moment, that, where it is wanting, all the rest of our faculties are in a great measure useless. And we in our thoughts, reasonings, and knowledge, could not proceed beyond present objects, were it not for the assistance of our memories; wherein there may be two defects:—

First, that it loses the idea quite, and so far produces perfect ignorance. For, since we can know nothing further than we have the idea of it, when that is gone, we are in perfect ignorance.

Secondly, that it moves slowly, and retrieves not the ideas that it has, and are laid up in store, quick enough to serve the mind upon occasion. This, if it be to a great degree, is stupidity; and he who, through this default in his memory, has not the ideas that are really preserved there, ready at hand when need and occasion calls for them, were almost as good be without them quite, since they serve him to little purpose. The dull man, who loses the opportunity, whilst he is seeking in his mind for those ideas that should serve his turn, is not much more happy in his knowledge than one that is perfectly ignorant. It is the business therefore of the memory to furnish to the mind those dormant ideas which it has present occasion for; in the having them ready at hand on all occasions, consists that which we call invention, fancy, and quickness of parts. . . .

CHAPTER XI

OF DISCERNING, AND OTHER OPERATIONS OF THE MIND

1. *No knowledge without discerning.*—Another faculty we may take notice of in our minds, is that of *discerning* and *distinguishing* between the several ideas it has. It is not enough to have a confused perception of something in general: unless the mind had a distinct perception of different objects and their qualities, it would be capable of very little knowledge; though the bodies that affect us were as busy about us as they are now, and the mind were continually employed in thinking. On this faculty of distinguishing one thing from another, depends the evidence and certainty of several even very general propositions, which have passed for innate truths; because men, overlooking the true cause why those propositions find universal assent, impute it wholly to native uniform impressions: whereas it in truth depends upon this clear discerning faculty of the mind, whereby it perceives two ideas to be the same or different. But of this more hereafter.

2. *The difference of wit and judgment.*—How much the imperfection of accurately discriminating ideas one from another lies either in the dullness or faults of the organs of sense, or want of acuteness, exercise, or attention in the understanding, or hastiness and precipitancy natural to some tempers, I will not here examine: it suffices to take notice, that this is one of the operations that the mind may reflect on and observe in itself. It is of that consequence to its other knowledge, that so far as this faculty is in itself dull, or not rightly made use of for the distinguishing one thing from another, so far our notions are confused, and our reason, and judgment disturbed or misled. If in having our ideas in the memory ready at hand consists quickness of parts; in this of having them unconfused, and being able nicely to distinguish one

thing from another where there is but the least difference, consists in a great measure the exactness of judgment and clearness of reason which is to be observed in one man above another. And hence, perhaps, may be given some reason of that common observation—that men who have a great deal of wit and prompt memories, have not always the clearest judgment or deepest reason. For, wit lying most in the assemblage of ideas, and putting those together with quickness and variety wherein can be found any resemblance or congruity, thereby to make up pleasant pictures and agreeable visions in the fancy; judgment, on the contrary, lies quite on the other side, in separating carefully one from another ideas wherein can be found the least difference, thereby to avoid being misled by similitude and by affinity to take one thing for another. This is a way of proceeding quite contrary to metaphor and allusion, wherein for the most part lies that entertainment and pleasantry of wit which strikes so lively on the fancy, and therefore is so acceptable to all people; because its beauty appears at first sight, and there is required no labor of thought to examine what truth or reason there is in it. The mind, without looking any farther, rests satisfied with the agreeableness of the picture and the gaiety of the fancy; and it is a kind of affront to go about to examine it by the severe rules of truth and good reason; whereby it appears that it consists in something that is not perfectly conformable to them. . . .

4. *Comparing.*—The comparing them one with another, in respect of extent, degrees, time, place, or any other circumstances, is another operation of the mind about its ideas, and is that upon which depends all that large tribe of ideas comprehended under relation; which of how vast an extent it is, I shall have occasion to consider hereafter. . . .

6. *Compounding.*—The next operation we may observe in the mind about its ideas is *composition;* whereby it puts together several of those simple ones it has received from sensation and reflection, and combines them into complex ones. Under this of composition may be reckoned also that of en-

larging; wherein though the composition does not so much appear as in more complex ones, yet it is nevertheless a putting several ideas together, though of the same kind. Thus, by adding several units together we make the idea of a dozen, and putting together the repeated ideas of several perches we frame that of a furlong. . . .

8. *Naming.*—When children have by repeated sensations got ideas fixed in their memories, they begin by degrees to learn the use of signs. And when they have got the skill to apply the organs of speech to the framing of articulate sounds, they begin to make use of words to signify their ideas to others. These verbal signs they sometimes borrow from others, and sometimes make themselves, as one may observe among the new and unusual names children often give to things in their first use of language.

9. *Abstraction.*—The use of words then being to stand as outward marks of our internal ideas, and those ideas being taken from particular things, if every particular idea that we take in should have a distinct name, names must be endless. To prevent this, the mind makes the particular ideas, received from particular objects, to become general; which is done by considering them as they are in the mind such appearances,—separate from all other existences, and the circumstances of real existence, as time, place, or any other concomitant ideas. This is called *abstraction,* whereby ideas taken from particular beings become general representatives of all of the same kind; and their names, general names, applicable to whatever exists conformable to such abstract ideas. Such precise, naked appearances in the mind, without considering how, whence, or with what others they came there, the understanding lays up (with names commonly annexed to them) as the standards to rank real existences into sorts, as they agree with these patterns, and to denominate them accordingly. Thus, the same color being observed today in chalk or snow, which the mind yesterday received from milk, it considers that appearance alone, makes it a representative of all of that kind, and, having given it the name whiteness, it by that sound signi-

fies the same quality wheresoever to be imagined or met with; and thus universals, whether ideas or terms, are made. . . .

14. *Method followed in this explication of faculties.*— These, I think, are the first faculties and operations of the mind which it makes use of in understanding; and though they are exercised about all its ideas in general, yet the instances I have hitherto given have been chiefly in simple ideas; and I have subjoined the explication of these faculties of the mind to that of simple ideas, before I come to what I have to say concerning complex ones, for these following reasons:—

First, because, several of these faculties being exercised at first principally about simple ideas, we might, by following nature in its ordinary method, trace and discover them in their rise, progress, and gradual improvements.

Secondly, because, observing the faculties of the mind, how they operate about simple ideas, which are usually in most men's minds much more clear, precise, and distinct than complex ones, we may the better examine and learn how the mind extracts, denominates, compares, and exercises in its other operations about those which are complex, wherein we are much more liable to mistake.

Thirdly, because these very operations of the mind about ideas received from sensations are themselves, when reflected on, another set of ideas, derived from that other source of our knowledge which I call reflection; and therefore fit to be considered in this place after the simple ideas of sensation. Of compounding, comparing, abstracting, etc., I have but just spoken, having occasion to treat of them more at large in other places.

15. *These are the beginnings of human knowledge.*—And thus I have given a short and, I think, true history of the first beginnings of human knowledge, whence the mind has its first objects, and by what steps it makes its progress to the laying in and storing up those ideas out of which is to be framed all the knowledge it is capable of; wherein I must appeal to experience and observation whether I am in the right: the best way to come to truth being to examine things as really they

are, and not to conclude they are as we fancy of ourselves, or have been taught by others to imagine.

16. *Appeal to experience.*—To deal truly, this is the only way that I can discover whereby the ideas of things are brought into the understanding: if other men have either innate ideas or infused principles, they have reason to enjoy them; and if they are sure of it, it is impossible for others to deny them the privilege that they have above their neighbors. I can speak but of what I find in myself, and is agreeable to those notions which, if we will examine the whole course of men in their several ages, countries, and educations, seem to depend on those foundations which I have laid, and to correspond with this method in all the parts and degrees thereof.

17. I pretend not to teach, but to inquire; and therefore cannot but confess here again, that external and internal sensation are the only passages that I can find of knowledge to the understanding. These alone, as far as I can discover, are the windows by which light is let into this dark room. For methinks the understanding is not much unlike a closet wholly shut from light, with only some little openings left to let in external visible resemblances or ideas of things without: [would the pictures coming into such a dark room but stay there,] and lie so orderly as to be found upon occasion, it would very much resemble the understanding of a man in reference to all objects of sight, and the ideas of them.

These are my guesses concerning the means whereby the understanding comes to have and retain simple ideas and the modes of them, with some other operations about them. I proceed now to examine some of these simple ideas and their modes a little more particularly.

CHAPTER XII

OF COMPLEX IDEAS

1. *Made by the mind out of simple ones.*—We have hitherto considered those ideas, in the reception whereof the

mind is only passive, which are those simple ones received from sensation and reflection before mentioned, whereof the mind cannot make one to itself, nor have any ideas which does not wholly consist of them. [But as the mind is wholly passive in the reception of all its simple ideas, so it exerts several acts of its own, whereby out of its simple ideas, as the materials and foundations of the rest, the other are framed. The acts of the mind wherein it exerts its power over its simple ideas are chiefly these three: (1) Combining several simple ideas into one compound one; and thus all *complex ideas* are made. (2) The second is bringing two ideas, whether simple or complex, together, and setting them by one another, so as to take a view of them at once, without uniting them into one; by which way it gets all its *ideas of relations*. (3) The third is separating them from all other ideas that accompany them in their real existence; this is called abstraction: and thus all its *general ideas* are made. This shows man's power and its way of operation to be much the same in the material and intellectual world. For, the materials in both being such as he has no power over, either to make or destroy, all that man can do is either to unite them together, or to set them by one another, or wholly separate them. I shall here begin with the first of these in the consideration of complex ideas, and come to the other two in their due places.] As simple ideas are observed to exist in several combinations united together, so the mind has a power to consider several of them united together as one idea; and that not only as they are united in external objects, but as itself has joined them. Ideas thus made up of several simple ones put together I call *complex;* such as are beauty, gratitude, a man, an army, the universe; which, though complicated of various simple ideas or complex ideas made up of simple ones, yet are, when the mind pleases, considered each by itself as one entire thing, and signified by one name.

2. *Made voluntarily.*—In this faculty of repeating and joining together its ideas, the mind has great power in varying and multiplying the objects of its thoughts infinitely beyond

what sensation or reflection furnished it with; but all this still confined to those simple ideas which it received from those two sources, and which are the ultimate materials of all its compositions. For, simple ideas are all from things themselves; and of these the mind can have no more nor other than what are suggested to it. It can have no other ideas of sensible qualities than what come from without by the senses, nor any ideas of other kind of operations of a thinking substance than what it finds in itself. But when it has once got these simple ideas, it is not confined barely to observation, and what offers itself from without; it can, by its own power, put together those ideas it has, and make new complex ones which it never received so united.

3. *Complex ideas are either of modes, substances, or relations.*—Complex ideas, however compounded and decompounded, though their number be infinite, and the variety endless wherewith they fill and entertain the thoughts of men, yet I think they may be all reduced under these three heads: (1) Modes. (2) Substances. (3) Relations.

4. *Ideas of modes.*—First, *modes* I call such complex ideas which, however compounded, contain not in them the supposition of subsisting by themselves, but are considered as dependences on, or affections of, substances; such are the ideas signified by the words, triangle, gratitude, murder, etc. And if in this I use the word mode in somewhat a different sense from its ordinary signification, I beg pardon; it being unavoidable in discourses differing from the ordinary received notions, either to make new words or to use old words in somewhat a new signification: the latter whereof, in our present case, is perhaps the more tolerable of the two.

5. *Simple and mixed modes.*—Of these modes there are two sorts which deserve distinct consideration. First, there are some which are only variations or different combinations of the same simple idea, without the mixture of any other, as a dozen, or score; which are nothing but the ideas of so many distinct units added together: and these I call *simple modes,* as being contained within the bounds of one simple idea,

Secondly, there are others compounded of simple ideas, of several kinds, put together to make one complex one; v. g., beauty, consisting of a certain composition of color and figure, causing delight in the beholder; theft, which, being the concealed change of the possession of any thing, without the consent of the proprietor, contains, as is visible, a combination of several ideas of several kinds; and these I call *mixed modes.*

6. *Ideas of substances, single or collective.*—Secondly, the ideas of *substances* are such combinations of simple ideas as are taken to represent distinct *particular* things subsisting by themselves, in which the supposed or confused idea of substance, such as it is, is always the first and chief. Thus, if to substance be joined the simple idea of a certain dull, whitish color, with certain degrees of weight, hardness, ductility, and fusibility, we have the idea of lead; and a combination of the ideas of a certain sort of figure, with the powers of motion, thought, and reasoning, joined to substance, make the ordinary idea of a man. Now of substances also there are two sorts of ideas, one of single substances, as they exist separately, as of a man or a sheep; the other of several of those put together, as an army of men or flock of sheep; which collective ideas of several substances thus put together, are as much each of them one single idea as that of a man or an unit.

7. *Relation.*—Thirdly, the last sort of complex ideas is that we call *relation,* which consists in the consideration and comparing one idea with another. Of these several kinds we shall treat in their order.

8. *The abstrusest ideas are from the two sources.*—If we trace the progress of our minds, and with attention observe how it repeats, adds together, unites its simple ideas received from sensation or reflection, it will lead us farther than at first perhaps we should have imagined. And I believe we shall find, if we warily observe the originals of our notions, that even the most abtruse ideas, how remote soever they may seem from sense, or from any operation of our own minds, are yet only such as the understanding frames to itself, by repeating and joining together ideas that it had either from objects of

sense, or from its own operations about them: so that those even large and abstract ideas are derived from sensation or reflection, being no other than what the mind, by the ordinary use of its own faculties, employed about ideas received from objects of sense, or from the operations it observes in itself about them, may and does attain unto. This I shall endeavor to show in the ideas we have of space, time, and infinity, and some few other that seem the most remote from those originals. . . .

[Chapters XIII–XX, here omitted, treat of various ideas of simple modes. Locke considers the simple modes of Space (XIII), of Duration (XIV), of Number (XVI), of Infinity (XVII), of Thinking (XIX), and of Pleasure and Pain (XX).

Locke has already shown that we get the simple idea of *space* both by our sight and touch. Having this idea, men "for the use and by the custom of measuring, settle in their minds the ideas of certain stated lengths." By "adding these still one to another," they may "enlarge their idea of space as much as they please. This power of repeating or doubling any idea we have of any distance, and adding it to the former as often as we will, without being ever able to come to any stop or stint, let us enlarge it as much as we will, is that which gives us the idea of *immensity*." In the remainder of the chapter Locke argues against Descartes' identification of matter with extension just as he had previously argued (in Chap. I) against the Cartesian identification of mind with thought: "If therefore they [the Cartesians] mean by body and extension the same that other people do, viz., by body, something that is solid and extended, whose parts are separable and movable different ways; and by extension, only the space that lies between the extremities of those solid coherent parts, and which is possessed by them, they confound very different ideas one with another. For I appeal to every man's own thoughts, whether the idea of space be not as distinct from that of solidity, as it is from the idea of scarlet color? It is true, solidity cannot exist without extension, neither can scarlet color exist without extension; but this hinders not but that they are distinct ideas. Many ideas require others as necessary to their existence or conception, which yet are very distinct ideas. Motion can neither be, nor be conceived, without space; and yet motion is not space, nor space motion; space can

exist without it, and they are very distinct ideas; and so, I think, are those of space and solidity. Solidity is so inseparable an idea from body, that upon that depends its filling of space, its contact, impulse, and communication of motion upon impulse. And if it be a reason to prove that spirit is different from body, because thinking includes not the idea of extension in it, the same reason will be as valid, I suppose, to prove that space is not body, because it includes not the idea of solidity in it; space and solidity being as distinct ideas as thinking and extension, and as wholly separable in the mind one from another. Body, then, and extension, it is evident, are two distinct ideas."

Duration Locke defines as 'fleeting extension': "There is another sort of distance or length, the idea whereof we get not from the permanent parts of space, but from the fleeting and perpetually perishing parts of succession. This we call *duration,* the simple modes whereof are any different lengths of it whereof we have distinct ideas, as *hours, days, years,* etc., *time,* and *eternity.*" He summarizes his conclusions from the analysis of this idea as follows: "And thus I think it is plain, that from those two fountains of all knowledge before mentioned, viz. reflection and sensation, we get the ideas of duration, and the measures of it.

"For, first, by observing what passes in our minds, how our ideas there in train constantly some vanish, and others begin to appear, we come by the idea of *succession.*

"Secondly, by observing a distance in the parts of this succession, we get the idea of *duration.*

"Thirdly, by sensation observing certain appearances, at certain regular and seeming equidistant periods, we get the ideas of certain lengths or *measures of duration,* as minutes, hours, days, years, etc.

"Fourthly, by being able to repeat those measures of time, or ideas of stated length of duration in our minds, as often as we will, we can come to imagine *duration where nothing does really endure or exist;* and thus we imagine to-morrow, next year, or seven years hence.

"Fifthly, by being able to repeat any such idea of any length of time, as of a minute, a year, or an age, as often as we will in our own thoughts, and add them one to another, without ever coming to the end of such addition, any nearer than we can to the end of number, to which we can always add, we come by the idea of *eternity,* as the future eternal duration of our souls, as well as the

eternity of that infinite Being which must necessarily have always existed.

"Sixthly, by considering any part of infinite duration, as set out by periodical measures, we come by the idea of what we call *time* in general."

The next chapter is "Of Duration and Expansion Considered Together." Locke's main point is: "expansion and duration do mutually embrace and comprehend each other; every part of space being in every part of duration, and every part of duration in every part of expansion. Such a combination of two distinct ideas is, I suppose, scarce to be found in all that great variety we do or can conceive, and may afford matter to farther speculation."

Number (Chap. XVI) is the simplest and most universal of all our ideas. "Amongst all the ideas we have, as there is none suggested to the mind by more ways, so there is none more simple, than that of *unity,* or one. It has no shadow of variety of composition in it: every object our senses are employed about, every idea in our understandings, every thought of our minds, brings this idea along with it. And therefore it is the most intimate to our thoughts, as well as it is, in its agreement to all other things, the most universal idea we have. For number applies itself to men, angels, actions, thoughts,—everything that either doth exist or can be imagined." Because its modes are made by uniform addition and "are of all other the most distinct" demonstrations in numbers are the most precise. Number is the measure of all measureables, particularly of expansion and duration; "and our idea of infinity even when applied to those seems to be nothing but the infinity of number. For what else are our ideas of eternity and immensity, but the repeated additions of certain ideas of imagined parts of duration and expansion, with the infinity of number, in which we can come to no end of addition? . . . And this endless addition or *addibility* (if anyone like the word better) of numbers, so apparent to the mind, is that, I think, which gives us the clearest and most distinct idea of infinity; of which more in the following chapter."

Infinity (Chap. XVII) is in its original intention attributed to space, duration and number. It is but figuratively that we extend it to other things, e.g., God's attributes of power, wisdom, and goodness. Our idea of infinity being then a modification of our ideas of expansion and duration, the next thing to be considered is how the mind comes by it. Locke's answer is that "by the

power we find in ourselves of repeating as often as we will any idea of space, we get the idea of immensity"; and in like fashion "by being able to repeat the idea of any length of duration we have in our minds, with all the endless addition of number, we come by the idea of eternity. For we find in ourselves, we can no more come to an end of such repeated ideas than we can come to the end of number; which every one perceives he cannot." *But* though "our idea of infinity arise from the contemplation of quantity, and the endless increase the mind is able to make in quantity; yet I guess we cause great confusion in our thoughts when we discourse or reason about an infinite quantity, as an infinite space or an infinite duration. For our idea of infinity being, as I think, *an endless growing idea,* but the idea of any quantity the mind has, being at that time terminated in that idea (for be it as great as it will, it can be no greater than it is), to join infinity to it, is to adjust a standing measure to a growing bulk; and therefore I think it is not an insignificant subtility if I say that we are carefully to distinguish between the idea of the infinity of space and the idea of a space infinite . . ." We can have therefore no positive, determinate idea of an actual infinite number, duration or space. The belief that we have such a positive idea of the infinite has led to all sorts of perplexities and contradictions in men's thinking on the subject.

Chapters XVIII–XX, "Of Other Simple Modes," "Of the Modes of Thinking," and "Of the Modes of Pleasure and Pain" are of importance only for their definitions of terms, and introduced chiefly, as Locke himself says of Chapter XVIII, "for method's sake."]

CHAPTER XXI

OF POWER

1. *This idea how got.*—The mind being every day informed, by the senses, of the alteration of those simple ideas it observes in things without, and taking notice how one comes to an end and ceases to be, and another begins to exist which was not before; reflecting also, on what passes within itself, and observing a constant change of its ideas, sometimes by the impression of outward objects on the senses, and some-

times by the determination of its own choice; and concluding, from what it has so constantly observed to have been, that the like changes will for the future be made in the same things by like agents, and by the like ways; considers in one thing the possibility of having any of its simple ideas changed, and in another the possibility of making that change; and so comes by that idea which we call *power*. Thus we say, fire has a power to melt gold—i. e., to destroy the consistency of its insensible parts, and consequently its hardness, and make it fluid—and gold has a power to be melted; that the sun has a power to blanch wax, and wax a power to be blanched by the sun, whereby the yellowness is destroyed and whiteness made to exist in its room. In which and the like cases, the power we consider is in reference to the change of perceivable ideas. For we cannot observe any alteration to be made in, or operation upon, anything, but by the observable change of its sensible ideas; nor conceive any alteration to be made, but by conceiving a change of some of its ideas.

2. *Power, active and passive.*—Power thus considered is twofold: viz., as able to make, or able to receive, any change. The one may be called *active,* and the other *passive,* power. Whether matter be not wholly destitute of active power, as its author, God, is truly above all passive power; and whether the intermediate state of created spirits be not that alone which is capable of both active and passive power, may be worth consideration. I shall not now enter into that inquiry; my present business being not to search into the original of power, but how we come by the idea of it. But since active powers make so great a part of our complex ideas of natural substances (as we shall see hereafter), and I mention them as such, according to common apprehension; yet they being not, perhaps, so truly active powers as our hasty thoughts are apt to represent them, I judge it not amiss, by this intimation, to direct our minds to the consideration of God and spirits, for the clearest idea of active power.

3. *Power includes relation.*—I confess power includes in it some kind of *relation*—a relation to action or change; as, in-

deed, which of our ideas, of what kind soever, when attentively considered, does not? For our ideas of extension, duration, and number, do they not all contain in them a secret relation of the parts? Figure and motion have something relative in them much more visibly. And sensible qualities, as colors and smells, etc., what are they but the powers of different bodies in relation to our perception, etc.? And if considered in the things themselves, do they not depend on the bulk, figure, texture, and motion of the parts? All which include some kind of relation in them. Our idea therefore of power, I think, may well have a place amongst other simple ideas, and be considered as one of them, being one of those that make a principal ingredient in our complex ideas of substances, as we shall hereafter have occasion to observe.

4. *The clearest idea of active power had from spirit.*—[We are abundantly furnished with the idea of *passive* power, by almost all sorts of sensible things. In most of them we cannot avoid observing their sensible qualities, nay, their very substances to be in a continual flux;] and therefore with reason we look on them as liable still to the same change. Nor have we of *active* power (which is the more proper signification of the word power) fewer instances; since, whatever change is observed, the mind must collect a power somewhere, able to make that change, as well as a possibility in the thing itself to receive it. But yet, if we will consider it attentively, bodies, by our senses, do not afford us so clear and distinct an idea of active power, as we have from reflection on the operations of our minds. For, all power relating to action, and there being but two sorts of action whereof we have any idea, viz., thinking and motion, let us consider whence we have the clearest ideas of the powers which produce these actions. (1) Of thinking, body affords us no idea at all; it is only from reflection that we have that. (2) Neither have we from body any idea of the beginning of motion. A body at rest affords us no idea of any active power to move; and when it is set in motion itself, that motion is rather a passion than an action in it. For when the ball obeys the stroke of a billiard-stick,

it is not any action of the ball, but bare passion: also when by impulse it sets another ball in motion that lay in its way, it only communicates the motion it had received from another, and loses in itself so much as the other received; which gives us but a very obscure idea of an active power of moving in body, whilst we observe it only to transfer but not produce any motion. For it is but a very obscure idea of power, which reaches not the production of the action, but the continuation of the passion. For so is motion, in a body impelled by another; the continuation of the alteration made in it from rest to motion being little more an action, than the continuation of the alteration of its figure by the same blow is an action. The idea of the beginning of motion we have only from reflection on what passes in ourselves, where we find by experience, that, barely by willing it, barely by a thought of the mind, we can move the parts of our bodies which were before at rest. So that it seems to me, we have, from the observation of the operation of bodies by our senses, but a very imperfect, obscure idea of active power, since they afford us not any idea in themselves of the power to begin any action, either motion or thought. But if from the impulse bodies are observed to make one upon another, any one thinks he has a clear idea of power, it serves as well to my purpose, sensation being one of those ways whereby the mind comes by its ideas; only I thought it worth while to consider here by the way, whether the mind doth not receive its idea of active power clearer from reflection on its own operations, than it doth from any external sensation. . . .

[The omitted portions of this chapter, (§ 5–71) constitute a long, involved, and ambiguous digression on the subject of freedom of the will. In the first edition of the *Essay* Locke held that the will is determined by the apparent greater good. In the second edition, he changed to the view that some immediate, pressing uneasiness in reality determines the will (cf. § 35). Again, in the revised chapter Locke introduces alongside his original view that freedom is a "power to act according to our will," the conception of freedom as a "power to suspend volition" and so allow the will

to be determined by a deliberate judgment (cf. § 24–27 and § 48, 53, 57). The two views are not rendered consistent, and the whole discussion is more instructive as to the difficulties of the problem than conclusive in its results.]

74. . . . [Before I close this chapter, it may perhaps be to our purpose, and help to give us clearer conceptions about *power,* if we make our thoughts take a little more exact survey of *action.* I have said above, that we have ideas but of two sorts of action, viz., motion and thinking. These, in truth, though called and counted actions, yet, if nearly considered, will not be found to be always perfectly so. For, if I mistake not, there are instances of both kinds, which, upon due consideration, will be found rather passions than actions, and consequently so far the effects barely of *passive powers* in those subjects which yet on their accounts are thought agents. For in these instances the substance that hath motion or thought receives the impression, whereby it is put into that action, purely from without, and so acts merely by the capacity it has to receive such an impression from some external agent; and such a power is not properly an active power, but a mere passive capacity in the subject. Sometimes the substance or agent puts itself into action by its own power; and this is properly *active power.* Whatsoever modification a substance has whereby it produces any effect, that is called action: v. g., a solid substance by motion operates on or alters the sensible ideas of another substance, and therefore this modification of motion we call action. But yet this motion in that solid substance is, when rightly considered, but a passion, if it received it only from some external agent. So that the active power of motion is in no substance which cannot begin motion in itself, or in another substance, when at rest. So likewise in thinking, a power to receive ideas or thoughts from the operation of any external substance, is called a power of thinking; but this is but a passive power or capacity. But to be able to bring into view ideas out of sight at one's own choice, and to compare which of them one thinks fit, this is an active

power. This reflection may be of some use to preserve us from mistakes about powers and actions, which grammar and the common frame of languages may be apt to lead us into: since what is signified by verbs that grammarians call active, does not always signify action; v. g., this proposition, "I see the moon or a star," or "I feel the heat of the sun," though expressed by a verb active, does not signify any action in me whereby I operate on those substances; but only the reception of the ideas of light, roundness, and heat, wherein I am not active, but barely passive, and cannot, in that position of my eyes or body, avoid receiving them. But when I turn my eyes another way, or remove my body out of the sunbeams, I am properly active; because of my own choice, by a power within myself, I put myself into that motion. Such an action is the product of active power.]

75. And thus I have, in a short draught, given a view of *our original ideas,* from whence all the rest are derived, and of which they are made up; which if I would consider as a philosopher, and examine on what cause they depend, and of what they are made, I believe they all might be reduced to these very few primary and original ones, viz., extension, solidity, mobility, or the power of being moved; which by our senses we receive from body: perceptivity, or the power of perception, or thinking; motivity, or the power of moving; which by reflection we receive from our minds. I crave leave to make use of these two new words, to avoid the danger of being mistaken in the use of those which are equivocal. To which if we add existence, duration, number, which belong both to the one and the other, we have perhaps all the original ideas on which the rest depend. For by these, I imagine, might be explained the nature of colors, sounds, tastes, smells, and all other ideas we have, if we had but faculties acute enough to perceive the severally-modified extensions and motions of these minute bodies which produce those several sensations in us. But my present purpose being only to inquire into the knowledge the mind has of things by those ideas and appearances which God has fitted it to receive from them, and

how the mind comes by that knowledge, rather than into their causes or manner of production, I shall not, contrary to the design of this *Essay,* set myself to inquire philosophically into the peculiar constitution of *bodies* and the configuration of parts, whereby they have the power to produce in us the ideas of their sensible qualities. I shall not enter any farther into that disquisition, it sufficing to my purpose to observe that gold or saffron has a power to produce in us the idea of yellow; and snow or milk, the idea of white; which we can only have by our sight, without examining the texture of the parts of those bodies, or the particular figures or motion of the particles which rebound from them, to cause in us that particular sensation; though when we go beyond the bare ideas in our minds, and would inquire into their causes, we cannot conceive any thing else to be in any sensible object whereby it produces different ideas in us, but the different bulk, figure, number, texture, and motion of its insensible parts.

[Chapter XXII, "Of Mixed Modes," briefly defines them, explains how they are, as it were, constituted by a name, and discusses the general reasons why men come to form a variety of such ideas.]

CHAPTER XXIII

OF OUR COMPLEX IDEAS OF SUBSTANCES

1. *Ideas of particular substances, how made.*—The mind being, as I have declared, furnished with a great number of the simple ideas conveyed in by the senses, as they are found in exterior things, or by reflection on its own operations, takes notice, also, that a certain number of these simple ideas go constantly together; which being presumed to belong to one thing, and words being suited to common apprehensions, and made use of for quick despatch, are called, so united in one subject, by one name; which, by inadvertency, we are apt afterward to talk of and consider as one simple idea, which indeed is a complication of many ideas together: because, as

I have said, not imagining how these simple ideas can subsist by themselves, we accustom ourselves to suppose some *substratum* wherein they do subsist, and from which they do result; which therefore we call *substance.*

2. *Our obscure idea of substance in general.*—So that if anyone will examine himself concerning his notion of pure substance in general, he will find he has no other idea of it at all, but only a supposition of he knows not what support of such qualities which are capable of producing simple ideas in us; which qualities are commonly called accidents. If anyone should be asked, what is the subject wherein color or weight inheres, he would have nothing to say but, the solid extended parts. And if he were demanded, what is it that solidity and extension inhere in, he would not be in a much better case than the Indian before mentioned, who, saying that the world was supported by a great elephant, was asked, what the elephant rested on; to which his answer was, a great tortoise; but being again pressed to know what gave support to the broad-backed tortoise, replied—something, he knew not what. And thus here, as in all other cases where we use words without having clear and distinct ideas, we talk like children: who, being questioned what such a thing is which they know not, readily give this satisfactory answer, that it is *something;* which in truth signifies no more, when so used, either by children or men, but that they know not what; and that the thing they pretend to know and talk of, is what they have no distinct idea of at all, and so are perfectly ignorant of it, and in the dark. The idea, then, we have, to which we give the *general* name substance, being nothing but the supposed, but unknown, support of those qualities we find existing, which we imagine cannot subsist *sine re substante,* "without something to support them," we call that support *substantia;* which, according to the true import of the word, is, in plain English, standing under, or upholding.

3. *Of the sorts of substances.*—An obscure and relative idea of substance in general being thus made, we come to have the ideas of particular sorts of substances, by collecting

such combinations of simple ideas as are by experience and observation of men's senses taken notice of to exist together, and are therefore supposed to flow from the particular internal constitution or unknown essence of that substance. Thus we come to have the ideas of a man, horse, gold, water, etc., of which substances, whether anyone has any other clear idea, farther than of certain simple ideas coexistent together, I appeal to every one's own experience. It is the ordinary qualities observable in iron or a diamond, put together, that make the true complex idea of those substances, which a smith or a jeweller commonly knows better than a philosopher; who, whatever substantial forms he may talk of, has no other idea of those substances than what is framed by a collection of those simple ideas which are to be found in them. Only we must take notice that our complex ideas of substances, besides all these simple ideas they are made up of, have always the confused idea of something to which they belong, and in which they subsist: and therefore when we speak of any sort of substance, we say it is a thing having such or such qualities; as, body is a thing that is extended, figured, and capable of motion; spirit, a thing capable of thinking; and so hardness, friability, and power to draw iron, we say, are qualities to be found in a loadstone. These and the like fashions of speaking, intimate that the substance is supposed always something, besides the extension, figure, solidity, motion, thinking, or other observable ideas, though we know not what it is.

4. *No clear or distinct idea of substance in general.*— Hence, when we talk or think of any particular sort of corporeal substances, as horse, stone, etc., though the idea we have of either of them be but the complication or collection of those several simple ideas of sensible qualities which we used to find united in the thing called horse or stone; yet because we cannot conceive how they should subsist alone, nor one in another, we suppose them existing in, and supported by, some common subject; which support we denote by the name substance, though it be certain we have no clear or distinct idea of that thing we suppose a support.

5. *As clear an idea of spirit as body.*—The same happens concerning the operations of the mind; viz., thinking, reasoning, fearing, etc., which we, concluding not to subsist of themselves, nor apprehending how they can belong to body, or be produced by it, we are apt to think these the actions of some other substance, which we call *spirit;* whereby yet it is evident, that having no other idea or notion of matter but something wherein those many sensible qualities which affect our senses do subsist; by supposing a substance wherein thinking, knowing, doubting, and a power of moving, etc., do subsist, we have as clear a notion of the substance of spirit as we have of body: the one being supposed to be (without knowing what it is) the *substratum* to those simple ideas we have from without; and the other supposed (with a like ignorance of what it is) to be the *substratum* to those operations which we experiment in ourselves within. It is plain, then, that the idea of *corporeal substance* in matter is as remote from our conceptions and apprehensions as that of *spiritual substance,* or spirit; and therefore, from our not having any notion of the substance of spirit, we can no more conclude its non-existence than we can, for the same reason, deny the existence of body: it being as rational to affirm there is no body, because we have no clear and distinct idea of the substance of matter, as to say there is no spirit, because we have no clear and distinct idea of the substance of a spirit.

6. *Our ideas of particular sorts of substances.*—Whatever therefore be the secret and abstract nature of substance in general, all the ideas we have of particular, distinct sorts of substances, are nothing but several combinations of simple ideas coexisting in such, though unknown, cause of their union, as makes the whole subsist of itself. It is by such combinations of simple ideas, and nothing else, that we represent particular sorts of substances to ourselves; such are the ideas we have of their several species in our minds; and such only do we, by their specific names, signify to others, v. g., man, horse, sun, water, iron; upon hearing which words everyone who understands the language, frames in his mind a

combination of those several simple ideas which he has usually observed or fancied to exist together under that denomination; all which he supposes to rest in, and be, as it were, adherent to, that unknown common subject, which inheres not in anything else. Though in the meantime it be manifest, and everyone upon inquiry into his own thoughts will find, that he has no other idea of any substance, v. g., let it be gold, horse, iron, man, vitriol, bread, but what he has barely of those sensible qualities which he supposes to inhere with a supposition of such a *substratum* as gives, as it were, a support to those qualities, or simple ideas, which he has observed to exist united together. Thus, the idea of the sun,—what is it but an aggregate of those several simple ideas—bright, hot, roundish, having a constant regular motion, at a certain distance from us, and perhaps some other: as he who thinks and discourses of the sun has been more or less accurate in observing those sensible qualities, ideas, or properties which are in that thing which he calls the sun.

7. *Power, a great part of our complex ideas of substances.* —For he has the perfectest idea of any of the particular sorts of substances who has gathered and put together most of those simple ideas which do exist in it, among which are to be reckoned its active powers and passive capacities; which, though not simple ideas, yet in this respect, for brevity's sake, may conveniently enough be reckoned amongst them. Thus, the power of drawing iron is one of the ideas of the complex one of that substance we call a loadstone, and a power to be so drawn is a part of the complex one we call iron; which powers pass for inherent qualities in those subjects: because every substance being as apt, by the powers we observe in it, to change some sensible qualities in other subjects, as it is to produce in us those simple ideas which we receive immediately from it, does, by those new sensible qualities introduced into other subjects, discover to us those powers which do thereby mediately affect our senses as regularly as its sensible qualities do it immediately; v. g., we immediately by our senses perceive in fire its heat and color; which are, if rightly

considered, nothing but powers in it to produce those ideas in us: we also by our senses perceive the color and brittleness of charcoal, whereby we come by the knowledge of another power in fire, which it has to change the color and consistency of wood. By the former, fire immediately, by the latter it mediately, discovers to us these several powers, which therefore we look upon to be a part of the qualities of fire, and so make them a part of the complex idea of it. For, all those powers that we take cognizance of, terminating only in the alteration of some sensible qualities in those subjects on which they operate, and so making them exhibit to us new sensible ideas; therefore it is that I have reckoned these powers amongst the simple ideas which make the complex ones of the sorts of substances; though these powers, considered in themselves, are truly complex ideas. And in this looser sense I crave leave to be understood, when I name any of these potentialities amongst the simple ideas which we recollect in our minds when we think of particular substances. For the powers that are severally in them are necessary to be considered, if we will have true distinct notions of the several sorts of substances.

8. Nor are we to wonder that powers make a great part of our complex ideas of substances, since their secondary qualities are those which, in most of them, serve principally to distinguish substances one from another, and commonly make a considerable part of the complex idea of the several sorts of them. For, our senses failing us in the discovering of the bulk texture, and figure of the minute parts of bodies, on which their real constitutions and differences depend, we are fain to make use of their secondary qualities, as the characteristical notes and marks whereby to frame ideas of them in our minds, and distinguish them one from another, all which secondary qualities, as has been shown, are nothing but bare powers. For the color and taste of opium are, as well as its soporific or anodyne virtues, mere powers depending on its primary qualities, whereby it is fitted to produce different operations on different parts of our bodies.

9. *Three sorts of ideas make our complex ones of substances.*—The ideas that make our complex ones of corporeal substances are of these three sorts. First, the ideas of the primary qualities of things which are discovered by our senses, and are in them even when we perceive them not: such are the bulk, figure, number, situation, and motion of the parts of bodies, which are really in them, whether we take notice of them or no. Secondly, the sensible secondary qualities which, depending on these, are nothing but the powers those substances have to produce several ideas in us by our senses; which ideas are not in the things themselves otherwise than as any thing is in its cause. Thirdly, the aptness we consider in any substance to give or receive such alterations of primary qualities as that the substance so altered should produce in us different ideas from what it did before; these are called active and passive powers: all which powers, as far as we have any notice or notion of them, terminate only in sensible simple ideas. For whatever alteration a loadstone has the power to make in the minute particles of iron, we should have no notion of any power it had at all to operate on iron, did not its sensible motion discover it; and I doubt not but there are a thousand changes that bodies we daily handle have a power to cause in one another, which we never suspect, because they never appear in sensible effects.

10. Powers therefore justly make a great part of our complex ideas of substance. He that will examine his complex idea of gold, will find several of its ideas that make it up to be only powers: as the power of being melted, but of not spending itself in the fire, of being dissolved in *aqua regia,* are ideas as necessary to make up our complex idea of gold, as its color, and weight: which, if duly considered, are also nothing but different powers. For, to speak truly, yellowness is not actually in gold; but is a power in gold to produce that idea in us by our eyes, when placed in a due light; and the heat which we cannot leave out of our idea of the sun, is no more really in the sun than the white color it introduces into wax. These are both equally powers in the sun, oper-

ating, by the motion and figure of its insensible parts, so on a man as to make him have the idea of heat; and so on wax as to make it capable to produce in a man the idea of white.

11. *The now secondary qualities of bodies would disappear, if we could discover the primary ones of their minute parts.*—Had we senses acute enough to discern the minute particles of bodies, and the real constitution on which their sensible qualities depend, I doubt not but they would produce quite different ideas in us, and that which is now the yellow color of gold would then disappear, and instead of it we should see an admirable texture of parts of a certain size and figure. This microscopes plainly discover to us; for, what to our naked eyes produces a certain color is, by thus augmenting the acuteness of our senses, discovered to be quite a different thing; and the thus altering, as it were, the proportion of the bulk of the minute parts of a colored object to our usual sight, produces different ideas from what it did before. Thus sand, or pounded glass, which is opaque and white to the naked eye, is pellucid in a microscope; and a hair seen this way loses its former color, and is in a great measure pellucid, with a mixture of some bright sparkling colors, such as appear from the refraction of diamonds and other pellucid bodies. Blood to the naked eye appears all red; but by a good miscroscope, wherein its lesser parts appear, shows only some few globules of red, swimming in a pellucid liquor; and how these red globules would appear, if glasses could be found that yet could magnify them one thousand or ten thousand times more, is uncertain. . . .

14. *Our ideas of substances.*—But to return to the matter in hand—the ideas we have of substances, and the ways we come by them: I say, our specific ideas of substances are nothing else but *a collection of a certain number of simple ideas, considered as united in one thing.* These ideas of substances, though they are commonly simple apprehensions, and the names of them simple terms, yet in effect are complex and compounded. Thus the idea which an Englishman signifies

by the name swan, is white color, long neck, red beak, black legs, and whole feet, and all these of a certain size, with a power of swimming in the water, and making a certain kind of noise; and perhaps to a man who has long observed this kind of birds, some other properties, which all terminate in sensible simple ideas, all united in one common subject.

15. *Idea of spiritual substances as clear as of bodily substances.*—Besides the complex ideas we have of material sensible substances, of which I have last spoken, by the simple ideas we have taken from those operations of our own minds, which we experiment daily in ourselves, as thinking, understanding, willing, knowing, and power of beginning motion, etc., co-existing in some substance, we are able to frame *the complex idea of an immaterial spirit.* And thus, by putting together the ideas of thinking, perceiving, liberty, and power of moving themselves and other things, we have as clear a perception and notion of immaterial substances as we have of material. For putting together the ideas of thinking and willing, or the power of moving or quieting corporeal motion, joined to substance, of which we have no distinct idea, we have the idea of an immaterial spirit; and by putting together the ideas of coherent solid parts, and a power of being moved, joined with substance, of which, likewise we have no positive idea, we have the idea of matter. The one is as clear and distinct an idea as the other: the idea of thinking and moving a body being as clear and distinct ideas as the ideas of extension, solidity, and being moved. For our idea of substance is equally obscure, or none at all, in both; it is but a supposed I-know-not-what, to support those ideas we call accidents. [It is for want of reflection that we are apt to think that our senses show us nothing but material things. Every act of sensation, when duly considered, gives us an equal view of both parts of nature, the corporeal and spiritual. For whilst I know, by seeing or hearing, etc., that there is some corporeal being without me, the object of that sensation, I do more certainly know that there is some spiritual being within me that sees and hears. This I must be convinced cannot be the action

of bare insensible matter, nor ever could be without an immaterial thinking being.]

16. *No idea of abstract substance.*—By the complex idea of extended, figured, colored, and all other sensible qualities, which is all that we know of it, we are as far from the idea of the substance of body as if we knew nothing at all; nor after all the acquaintance and familiarity which we imagine we have with matter, and the many qualities men assure themselves they perceive and know in bodies, will it, perhaps, upon examination be found that they have any more or clearer primary ideas belonging to body than they have belonging to immaterial spirit.

17. *The cohesion of solid parts and impulse, the primary ideas of body.*—The primary ideas we have peculiar to body, as contradistinguished to spirit, are the *cohesion of solid and consequently separable parts,* and a *power of communicating motion by impulse.* These, I think, are the original ideas proper and peculiar to body; for figure is but the consequence of finite extension.

18. *Thinking and motivity, the primary ideas of spirit.*—The ideas we have belonging and peculiar to spirit are *thinking,* and *will,* or a *power of putting body into motion by thought,* and, which is consequent to it, *liberty.* For as body cannot but communicate its motion by impulse to another body, which it meets with at rest; so the mind can put bodies into motion, or forbear to do so, as it pleases. The ideas of existence, duration, and mobility are common to them both. . . .

29. To conclude: Sensation convinces us that there are solid, extended substances; and reflection, that there are thinking ones; experience assures us of the existence of such beings; and that the one hath a power to move body by impulse, the other by thought; this we cannot doubt of. Experience, I say, every moment furnishes us with the clear ideas both of the one and the other. But beyond these ideas, as received from their proper sources, our faculties will not reach. If we would inquire farther into their nature, causes, and manner, we per-

ceive not the nature of extension clearer than we do of thinking. If we would explain them any farther, one is as easy as the other; and there is no more difficulty to conceive how a substance we know not should by thought set body into motion, than how a substance we know not should by impulse set body into motion. So that we are no more able to discover wherein the ideas belonging to body consist, than those belonging to spirit. From whence it seems probable to me that the simple ideas we receive from sensation and reflection are the boundaries of our thoughts; beyond which, the mind, whatever efforts it would make, is not able to advance one jot; nor can it make any discoveries, when it would pry into the nature and hidden causes of those ideas.

30. *Idea of body and spirit compared.*—So that, in short, the idea we have of spirit, compared with the idea we have of body, stands thus: the substance of spirit is unknown to us, and so is the substance of body equally unknown to us; two primary qualities or properties of body, viz. solid coherent parts and impulse, we have distinct clear ideas of; so likewise we know and have distinct clear ideas of two primary qualities or properties of spirit, viz., thinking, and a power of action, i. e. a power of beginning or stopping several thoughts or motions. We have also the ideas of several qualities inherent in bodies, and have the clear distinct ideas of them; which qualities are but the various modifications of the extension of cohering solid parts and their motion. We have likewise the ideas of several modes of thinking, viz., believing, doubting, intending, fearing, hoping; all which are but the several modes of thinking. We have also the ideas of willing, and moving the body consequent to it, and with the body itself too; for, as has been showed, spirit is capable of motion.

31. *The notion of spirit involves no more difficulty in it than that of body.*—Lastly, if this notion of immaterial spirit may have, perhaps, some difficulties in it not easy to be explained, we have therefore no more reason to deny or doubt the existence of such spirits, than we have to deny or doubt the existence of body because the notion of body is cumbered

with some difficulties, very hard and perhaps impossible to be explained or understood by us. For I would fain have instanced anything in our notion of spirit more perplexed, or nearer a contradiction, than the very notion of body includes in it; the divisibility *in infinitum* of any finite extension involving us, whether we grant or deny it, in consequences impossible to be explicated or made in our apprehensions consistent; consequences that carry greater difficulty and more apparent absurdity, than anything can follow from the notion of an immaterial knowing substance.

32. *We know nothing beyond our simple ideas.*—Which we are not at all to wonder at, since we, having but some few superficial ideas of things, discovered to us only by the senses from without, or by the mind reflecting on what it experiments in itself within, have no knowledge beyond that, much less of the internal constitution and true nature of things, being destitute of faculties to attain it. And therefore experimenting and discovering in ourselves knowledge and the power of voluntary motion, as certainly as we experiment or discover in things without us the cohesion and separation of solid parts, which is the extension and motion of bodies; we have as much reason to be satisfied with our notion of immaterial spirit, as with our notion of body; and the existence of the one as well as the other. For, it being no more a contradiction that thinking should exist separate and independent from solidity, than it is a contradiction that solidity should exist separate and independent from thinking, they being both but simple ideas, independent one from another; and having as clear and distinct ideas in us of thinking as of solidity, I know not why we may not as well allow a thinking thing without solidity, i. e. immaterial, to exist, as a solid thing without thinking, i. e. matter, to exist; especially since it is not harder to conceive how thinking should exist without matter, than how matter should think. For whensoever we would proceed beyond these simple ideas we have from sensation and reflection, and dive farther into the nature of things, we fall presently into darkness and obscurity, perplexedness and diffi-

culties; and can discover nothing farther but our own blindness and ignorance. But whichever of these complex ideas be clearest, that of body or immaterial spirit, this is evident, that the simple ideas that make them up are no other than what we have received from sensation or reflection; and so is it of all our other ideas of substances, even of God Himself.

33. *Idea of God.*—For if we examine the idea we have of the incomprehensible Supreme Being, we shall find that we come by it the same way; and that the complex ideas we have both of God and separate spirits are made of the simple ideas we receive from reflection: v. g., having, from what we experiment in ourselves, got the ideas of existence and duration, of knowledge and power, of pleasure and happiness, and of several other qualities and powers which it is better to have than to be without; when we would frame an idea the most suitable we can to the Supreme Being, we enlarge every one of these with our idea of infinity; and so, putting them together, make our complex idea of God. For that the mind has such a power of enlarging some of its ideas, received from sensation and reflection, has been already showed.

34. If I find that I know some few things, and some of them, or all, perhaps, imperfectly; I can frame an idea of knowing twice as many, which I can double again as often as I can add to number; and thus enlarge my idea of knowledge, by extending its comprehension to all things existing or possible. The same also I can do of knowing them more perfectly; i. e. all their qualities, powers, causes, consequences, and relations, etc., till all be perfectly known that is in them, or can any way relate to them; and thus frame the idea of infinite or boundless knowledge. The same may also be done of power, till we come to that we call infinite; and also of the duration of existence without beginning or end; and so frame the idea of an eternal being. The degrees or extent, wherein we ascribe existence, power, wisdom, and all other perfections (which we can have any ideas of), to that Sovereign Being which we call God, being all boundless and infinite, we frame the best idea of Him our minds are capable of: all which is done, I say, by

enlarging those simple ideas we have taken from the operations of our own minds by reflection, or by our senses from exterior things, to that vastness to which infinity can extend them.

35. For it is infinity which, joined to our ideas of existence, power, knowledge, etc., makes that complex idea whereby we represent to ourselves, the best we can, the Supreme Being. For though in His own essence, which certainly we do not know (not knowing the real essence of a pebble, or a fly, or of our own selves), God be simple and uncompounded; yet, I think, I may say we have no other idea of Him but a complex one of existence, knowledge, power, happiness, etc., infinite and eternal: which are all distinct ideas, and some of them being relative are again compounded of others; all which, being, as has been shown, originally got from sensation and reflection, go to make up the idea or notion we have of God.

36. *No ideas in our complex one of spirits, but those got from sensation or reflection.*—This farther is to be observed, that there is no idea we attribute to God, bating infinity, which is not also a part of our complex idea of other spirits. Because, being capable of no other simple ideas belonging to any thing but body, but those which by reflection we receive from the operation of our own minds, we can attribute to spirits no other but what we receive from thence: and all the difference we can put between them in our contemplation of spirits, is only in the several extents and degrees of their knowledge, power, duration, happiness, etc. For that in our ideas, as well of spirits as of other things, we are restrained to those we receive from sensation and reflection, is evident from hence, that in our ideas of spirits, how much soever advanced in perfection beyond those of bodies, even to that of infinite, we cannot yet have any idea of the manner wherein they discover their thoughts one to another: though we must necessarily conclude that separate spirits, which are beings that have perfecter knowledge and greater happiness than we, must needs have also a perfecter way of communicating their

thoughts than we have, who are fain to make use of corporeal signs and particular sounds, which are therefore of most general use, as being the best and quickest we are capable of. But of immediate communication having no experiment in ourselves, and consequently no notion of it at all, we have no idea how spirits which use not words can with quickness, or, much less, how spirits that have no bodies, can be masters of their own thoughts, and communicate or conceal them at pleasure, though we cannot but necessarily suppose they have such a power.

37. *Recapitulation.*—And thus we have seen what kind of ideas we have of substances of all kinds, wherein they consist, and how we came by them. From whence, I think, it is very evident:—

First, that all our ideas of the several sorts of substances are nothing but collections of simple ideas, with a supposition of something to which they belong, and in which they subsist; though of this supposed something we have no clear distinct idea at all.

Secondly, that all the simple ideas that, thus united in one common substratum, make up our complex ideas of several sorts of substances, are no other but such as we have received from sensation or reflection. So that even in those which we think we are most intimately acquainted with, and that come nearest the comprehension of our most enlarged conceptions, we cannot reach beyond those simple ideas. And even in those which seem most remote from all we have to do with, and do infinitely surpass anything we can perceive in ourselves by reflection, or discover by sensation in other things, we can attain to nothing but those simple ideas which we originally received from sensation or reflection; as is evident in the complex ideas we have of angels, and particularly of God Himself.

Thirdly, that most of the simple ideas that make up our complex ideas of substances, when truly considered, are only powers, however we are apt to take them for positive qualities: v. g., the greatest part of the ideas that make our complex idea

of gold are yellowness, great weight, ductility, fusibility, and solubility in *aqua regia,* etc., all united together in an unknown substratum; all which ideas are nothing else but so many relations to other substances, and are not really in the gold considered barely in itself, though they depend on those real and primary qualities of its internal constitution, whereby it has a fitness differently to operate and be operated on by several other substances.

[The brief and unimportant chapter XXIV treats "Of Collective Ideas of Substances."]

CHAPTER XXV

OF RELATION

1. *Relation, what.*—Besides the ideas, whether simple or complex, that the mind has of things as they are in themselves, there are others it gets from their comparison one with another. The understanding, in the consideration of anything, is not confined to that precise object: it can carry any idea, as it were, beyond itself, or at least look beyond it to see how it stands in conformity to any other. When the mind so considers one thing, that it does, as it were, bring it to and set it by another, and carries its view from one to the other: this is, as the words import, *relation* and *respect;* and the denominations given to positive things, intimating that respect, and serving as marks to lead the thoughts beyond the subject itself denominated to something distinct from it, are what we call *relatives;* and the things so brought together, *related.* Thus, when the mind considers Caius as such a positive being, it takes nothing into that idea, but what really exists in Caius; v. g., when I consider him as man, I have nothing in my mind but the complex idea of the species man. So likewise, when I say, "Caius is a white man," I have nothing but the bare consideration of man who hath that white color. But when I give Caius the name 'husband,' I intimate some other per-

son; and when I give him the name 'whiter,' I intimate some other thing: in both cases my thought is led to something beyond Caius, and there are two things brought into consideration. And since any idea, whether simple or complex, may be the occasion why the mind thus brings two things together, and as it were, takes a view of them at once, though still considered as distinct; therefore any of our ideas may be the foundation of relation. As in the above-mentioned instance, the contract and ceremony of marriage with Sempronia, is the occasion of the denomination or relation of husband; and the color white, the occasion why he is said to be whiter than freestone. . . .

4. *Relation different from the things related.*—This farther may be observed, that the ideas of relation may be the same in men who have far different ideas of the things that are related, or that are thus compared: v. g., those who have far different ideas of a man, may yet agree in the notion of a father: which is a notion superinduced to the substance, or man, and refers only to an act of that thing called man, whereby he contributed to the generation of one of his own kind, let man be what it will.

5. *Change of relation may be without any change in the subject.*—The nature therefore of relation consists in the referring or comparing two things one to another; from which comparison one or both comes to be denominated. And if either of those things be removed or cease to be, the relation ceases, and the denomination consequent to it, though the other receive in itself no alteration at all: v. g., Caius, whom I consider today as a father ceases to be so tomorrow, only by the death of his son, without any alteration made in himself. Nay, barely by the mind's changing the object, to which it compares any thing, the same thing is capable of having contrary denominations at the same time: v. g., Caius, compared to several persons, may truly be said to be older and younger, stronger and weaker, etc. . . .

7. *All things capable of relation.*—Concerning relation in general, these things may be considered.

First, that there is no one thing, whether simple idea, substance, mode, or relation, or name of either of them, which is not capable of almost an infinite number of considerations in reference to other things; and therefore this makes no small part of men's thoughts and words: v. g., one single man may at once be concerned in and sustain all these following relations, and many more, viz., father, brother, son, grandfather, grandson, father-in-law, son-in-law, husband, friend, enemy, subject, general, judge, patron, client, professor, European, Englishman, islander, servant, master, possessor, captain, superior, inferior, bigger, less, older, younger, contemporary, like, unlike, etc., to an almost infinite number: he being capable of as many relations as there can be occasions of comparing him to other things, in any manner of agreement, disagreement, or respect whatsoever: for, as I said, relation is a way of comparing or considering two things together, and giving one or both of them some appellation from that comparison, and sometimes giving even the relation itself a name.

8. *The ideas of relations clearer often than of the subjects related.*—Secondly, this farther may be considered concerning relation, that though it be not contained in the real existence of things, but something extraneous and superinduced; yet the ideas which relative words stand for are often clearer and more distinct than of those substances to which they do belong. The notion we have of a father or brother is a great deal clearer and more distinct than that we have of a man; or, if you will, paternity is a thing whereof it is easier to have a clear idea than of humanity; and I can much easier conceive what a friend is than what God: because the knowledge of one action, or one simple idea, is oftentimes sufficient to give the notion of a relation; but to the knowing of any substantial being, an accurate collection of sundry ideas is necessary. A man, if he compares two things together, can hardly be supposed not to know what it is wherein he compares them; so that when he compares any things together, he cannot but have a very clear idea of that relation. The ideas then of relations are capable at least of being more perfect and distinct

in our minds than those of substances. Because it is commonly hard to know all the simple ideas which are really in any substance, but for the most part easy enough to know the simple ideas that make up any relation I think on, or have a name for: v. g., comparing two men, in reference to one common parent, it is very easy to frame the ideas of brothers, without having yet the perfect idea of a man. For, significant relative words, as well as others, standing only for ideas; and those being all either simple, or made up of simple ones; it suffices for the knowing the precise idea the relative term stands for, to have a clear conception of that which is the foundation of the relation; which may be done without having a perfect and clear idea of the thing it is attributed to. Thus having the notion that one laid the egg out of which the other was hatched, I have a clear idea of the relation of dam and chick between the two cassiowaries in St. James's Park; though, perhaps, I have but a very obscure and imperfect idea of those birds themselves.

9. *Relations all terminate in simple ideas.*—Thirdly, though there be a great number of considerations wherein things may be compared one with another, and so a multitude of relations; yet they all terminate in, and are concerned about, those simple ideas either of sensation or reflection, which I think to be the whole materials of all our knowledge. To clear this, I shall show it in the most considerable relations that we have any notion of; and in some that seem to be the most remote from sense of reflection: which yet will appear to have their ideas from thence, and leave it past doubt, that the notions we have of them are but certain simple ideas, and so originally derived from sense or reflection.

10. *Terms leading the mind beyond the subject denominated are relative.*—Fourthly, that relation being the considering of one thing with another, which is extrinsical to it, it is evident that all words that necessarily lead the mind to any other ideas than are supposed really to exist in that thing to which the word is applied, are relative words: v. g., a man, black, merry, thoughtful, thirsty, angry, extended; these and

the like are all absolute, because they neither signify nor intimate any thing but what does or is supposed really to exist in the man thus denominated: but father, brother, king, husband, blacker, merrier, etc., are words which, together with the thing they denominate, imply also something else separate and exterior to the existence of that thing.

11. *Conclusion.*—Having laid down these premises concerning relation in general, I shall now proceed to show in some instances how all the ideas we have of relation are made up, as the others are, only of simple ideas; and that they all, how refined or remote from sense soever they seem, terminate at last in simple ideas. I shall begin with the most comprehensive relation, wherein all things that do or can exist are concerned; and that is the relation of cause and effect. The idea whereof, how derived from the two fountains of all our knowledge, sensation and reflection, I shall in the next place consider.

CHAPTER XXVI

OF CAUSE AND EFFECT AND OTHER RELATIONS

1. *Whence their ideas got.*—In the notice that our senses take of the constant vicissitude of things, we cannot but observe that several particular both qualities and substances begin to exist; and that they receive this their existence from the due application and operation of some other being. From this observation we get our ideas of cause and effect. *That which produces any simple or complex idea,* we denote by the general name *cause;* and *that which is produced, effect.* Thus finding that in that substance which we call 'wax' fluidity, which is a simple idea that was not in it before, is constantly produced by the application of a certain degree of heat, we call the simple idea of heat, in relation to fluidity in wax, the cause of it, and fluidity the effect. So also finding that the substance, wood, which is a certain collection of simple ideas

so called, by the application of fire is turned into another substance called ashes, i. e. another complex idea, consisting of a collection of simple ideas, quite different from that complex idea which we call wood, we consider fire, in relation to ashes, as cause, and the ashes, as effect. So that whatever is considered by us to conduce or operate to the producing any particular simple idea, or collection of simple ideas, whether substance or mode, which did not before exist, hath thereby in our minds the relation of a cause, and so is denominated by us. . . .

CHAPTER XXVII

[OF IDENTITY AND DIVERSITY]

[1. *Wherein identity consists.*—Another occasion the mind often takes of comparing, is the very being of things, when, considering anything as existing at any determined time and place, we compare it with itself existing at another time, and thereon form the ideas of identity and diversity. When we see any thing to be in any place in any instant of time, we are sure (be it what it will) that it is that very thing, and not another, which at that same time exists in another place, how like and undistinguishable soever it may be in all other respects: and in this consists *identity,* when the ideas it is attributed to, vary not at all from what they were that moment wherein we consider their former existence, and to which we compare the present. For we never finding, nor conceiving it possible, that two things of the same kind should exist in the same place at the same time, we rightly conclude that whatever exists anywhere at any time, excludes all of the same kind, and is there itself alone. When therefore we demand whether anything be the *same* or no, it refers always to something that existed such a time in such a place, which it was certain at that instant was the same with itself and no other. From whence it follows that one thing cannot have

two beginnings of existence, nor two things one beginning; it being impossible for two things of the same kind to be or exist in the same instant, in the very same place, or one and the same thing in different places. That therefore that had one beginning is the same thing; and that which had a different beginning in time and place from that, is not the same, but diverse. That which has made the difficulty about this relation, has been the little care and attention used in having precise notions of the things to which it is attributed.

2. *Identity of substances and of modes.*—We have the ideas but of three sorts of substances: (1) God. (2) Finite intelligences. (3) Bodies. First, God is without beginning, eternal, unalterable, and everywhere; and therefore concerning His identity, there can be no doubt. Secondly, finite spirits having had each its determinate time and place of beginning to exist, the relation to that time and place will always determine to each of them its identity as long as it exists. Thirdly, the same will hold of every particle of matter, to which no addition or subtraction of matter being made, it is the same. For though these three sorts of substances, as we term them, do not exclude one another out of the same place, yet we cannot conceive but that they must necessarily each of them exclude any of the same kind out of the same place; or else the notions and names of identity and diversity would be in vain, and there could be no such distinctions of substances, or anything else, one from another. For example, could two bodies be in the same place at the same time, then those two parcels of matter must be one and the same, take them great or little; nay, all bodies must be one and the same. For by the same reason that two particles of matter may be in one place, all bodies may be in one place; which, when it can be supposed, takes away the distinction of identity and diversity, of one and more, and renders it ridiculous. But it being a contradiction that two or more should be one, identity and diversity are relations and ways of comparing well-founded, and of use to the understanding. All other things being but modes or relations ultimately terminated in substances, the identity

and diversity of each particular existence of them too will be by the same way determined: only as to things whose existence is in succession, such as are the actions of finite beings, v. g., motion and thought, both which consist in a continued train of succession, concerning their diversity there can be no question: because, each perishing the moment it begins, they cannot exist in different times, or in different places, as permanent beings can at different times exist in distant places; and therefore no motion or thought, considered as at different times, can be the same, each part thereof having a different beginning of existence.

3. *Principium individuationis.*—From what has been said, it is easy to discover, what is so much inquired after, the *principium individuationis;* and that, it is plain, is existence itself, which determines a being of any sort to a particular time and place incommunicable to two beings of the same kind. This, though it seems easier to conceive in simple substances or modes, yet, when reflected on, is not more difficult in compound ones, if care be taken to what it is applied: v. g., let us suppose an atom, i. e. a continued body under one immutable superficies, existing in a determined time and place; it is evident that, considered in any instant of its existence, it is in that instant the same with itself. For, being at that instant what it is and nothing else, it is the same, and so must continue as long as its existence is continued; for so long it will be the same and no other. In like manner, if two or more atoms be joined together into the same mass, every one of those atoms will be the same, by the foregoing rule; and whilst they exist united together, the mass, consisting of the same atoms, must be the same mass, or the same body, let the parts be ever so differently jumbled: but if one of these atoms be taken away, or one new one added, it is no longer the same mass, or the same body. In the state of living creatures, their identity depends not on a mass of the same particles, but on something else. For in them the variation of great parcels of matter alters not the identity: an oak, growing from a plant to a great tree, and then lopped, is still the same oak; and a

colt, grown up to a horse, sometimes fat, sometimes lean, is all the while the same horse: though, in both these cases, there may be a manifest change of the parts; so that truly they are not either of them the same masses of matter, though there be truly one of them the same oak, and the other the same horse. The reason whereof is, that, in these two cases of a *mass of matter* and a *living body,* identity is not applied to the same thing.

4. *Identity of vegetables.*—We must therefore consider wherein an oak differs from a mass of matter; and that seems to me to be in this: That the one is only the cohesion of particles of matter any how united; the other such a disposition of them as constitutes the parts of an oak, and such an organization of those parts as is fit to receive and distribute nourishment, so as to continue and frame the wood, bark, and leaves, etc., of an oak, in which consists the vegetable life. That being then one plant which has such an organization of parts in one coherent body, partaking of one common life, it continues to be the same plant as long as it partakes of the same life, though that life be communicated to new particles of matter vitally united to the living plant in a like continued organization, conformable to that sort of plants. For this organization, being at any one instant in any one collection of matter, is in that particular concrete distinguished from all other, and is that individual life which existing constantly from that moment both forwards and backwards, in the same continuity of insensibly succeeding parts united to the living body of the plant, it has that identity which makes the same plant, and all the parts of it parts of the same plant, during all the time that they exist united in that continued organization, which is fit to convey that common life to all the parts so united.

5. *Identity of animals.*—The case is not so much different in brutes, but that anyone may hence see what makes an animal, and continues it the same. Something we have like this in machines, and may serve to illustrate it. For example, what is a watch? It is plain it is nothing but a fit organiza-

tion or construction of parts to a certain end, which, when a sufficient force is added to it, it is capable to attain. If we would suppose this machine one continued body, all whose organized parts were repaired, increased, or diminished, by a constant addition or separation of insensible parts, with one common life, we should have something very much like the body of an animal, with this difference—that in an animal the fitness of the organization, and the motion wherein life consists, begin together, the motion coming from within; but in machines, the force coming sensibly from without, is often away when the organ is in order, and well fitted to receive it.

6. *Identity of man.*—This also shows wherein the identity of the same *man* consists: viz., in nothing but a participation of the same continued life by constantly fleeting particles of matter, in succession vitally united to the same organized body. He that shall place the identity of man in any thing else but, like that of other animals, in one fitly organized body, taken in any one instant, and from thence continued under one organization of life in several successively fleeting particles of matter united to it, will find it hard to make an embryo, one of years, mad, and sober, the same man, by any supposition that will not make it possible for Seth, Ismael, Socrates, Pilate, St. Austin, and Cæsar Borgia, to be the same man. For if the identity of soul alone makes the same man, and there be nothing in the nature of matter why the same individual spirit may not be united to different bodies it will be possible that those men living in distant ages, and of different tempers, may have been the same man: which way of speaking must be from a very strange use of the word man, applied to an idea out of which body and shape is excluded. And that way of speaking would agree yet worse with the notions of those philosophers who allow of transmigration, and are of opinion that the souls of men may, for their miscarriages, be detruded into the bodies of beasts, as fit habitations, with organs suited to the satisfaction of their brutal inclinations. But yet, I think, nobody, could he be sure that

the soul of Heliogabalus were in one of his hogs, would yet say that hog were a man or Heliogabalus.

7. *Identity suited to the idea.*—It is not therefore unity of substance that comprehends all sorts of identity, or will determine it in every case; but, to conceive and judge of it aright, we must consider what idea the word it is applied to stands for: it being one thing to be the same substance, another the same man, and a third the same person, if person, man, and substance are three names standing for three different ideas. For such as is the idea belonging to that name, such must be the identity; which, if it had been a little more carefully attended to, would possibly have prevented a great deal of that confusion which often occurs about this matter, with no small seeming difficulties, especially concerning personal identity, which therefore we shall in the next place a little consider.

8. *Same man.*—An animal is a living organized body; and consequently the same animal, as we have observed, is the same continued life communicated to different particles of matter, as they happen successively to be united to that organized living body. And whatever is talked of other definitions, ingenious observation puts it past doubt, that the idea in our minds, of which the sound 'man,' in our mouths is the sign, is nothing else but of an animal of such a certain form: since I think I may be confident, that whoever should see a creature of his own shape or make, though it had no more reason all its life than a cat or a parrot, would call him still a man; or whoever should hear a cat or a parrot discourse, reason, and philosophize, would call or think it nothing but a cat or a parrot; and say, the one was a dull irrational man, and the other a very intelligent rational parrot. . . . For I presume it is not the idea of a thinking or rational being alone that makes the idea of a man in most people's sense, but of a body, so and so shaped, joined to it; and if that be the idea of a man, the same successive body not shifted all at once must, as well as the same immaterial spirit, go to the making of the same man.

9. *Personal identity.*—This being premised, to find where-

in personal identity consists, we must consider what *person* stands for; which I think, is a thinking intelligent being, that has reason and reflection, and can consider itself as itself, the same thinking thing, in different times and places; which it does only by that consciousness which is inseparable from thinking, and it seems to me essential to it: it being impossible for anyone to perceive, without perceiving that he does perceive. When we see, hear, smell, taste, feel, meditate, or will anything, we know that we do so. Thus it is always as to our present sensations and perceptions: and by this everyone is to himself that which he calls *self;* it not being considered, in this case, whether the same self be continued in the same or divers substances. For since consciousness always accompanies thinking, and it is that that makes everyone to be what he calls self, and thereby distinguishes himself from all other thinking things; in this alone consists personal identity, i. e. the sameness of a rational being: and as far as this consciousness can be extended backwards to any past action or thought, so far reaches the identity of that person; it is the same self now it was then; and it is by the same self with this present one that now reflects on it, that that action was done.

10. *Consciousness makes personal identity.*—But it is farther inquired whether it be the same identical substance. This, few would think they had reason to doubt of, if these perceptions, with their consciousness, always remained present in the mind, whereby the same thinking thing would be always consciously present, and, as would be thought, evidently the same to itself. But that which seems to make the difficulty is this, that this consciousness being interrupted always by forgetfulness, there being no moment of our lives wherein we have the whole train of all our past actions before our eyes in one view, but even the best memories losing the sight of one part whilst they are viewing another; and we sometimes, and that the greatest part of our lives, not reflecting on our past selves, being intent on our present thoughts, and in sound sleep having no thoughts at all, or at least none with that consciousness

which remarks our waking thoughts: I say, in all these cases, our consciousness being interrupted, and we losing the sight of our past selves, doubts are raised whether we are the same thinking thing, i. e. the same *substance,* or no. Which, however reasonable or unreasonable, concerns not personal identity at all: the question being, what makes the same *person,* and not whether it be the same identical substance which always thinks in the same person, which in this case matters not at all; different substances, by the same consciousness (where they do partake in it) being united into one person, as well as different bodies by the same life are united into one animal, whose identity is preserved, in that change of substance, by the unity of one continued life. For it being the same consciousness that makes a man be himself to himself, personal identity depends on that only, whether it be annexed solely to one individual substance, or can be continued in a succession of several substances. For as far as any intelligent being can repeat the idea of any past action with the same consciousness it had of it at first, and with the same consciousness it has of any present action; so far it is the same personal self. For it is by the consciousness it has of its present thoughts and actions that it is self to itself now, and so will be the same self, as far as the same consciousness can extend to actions past or to come; and would be by distance of time, or change of substance, no more two persons than a man be two men, by wearing other clothes today than he did yesterday, with a long or short sleep between: the same consciousness uniting those distant actions into the same person, whatever substance contributed to their production. . . .]

[In the remainder of this chapter Locke pursues the argument for his thesis that personal identity depends on consciousness, not substance.

Chapter XXVIII, "Of Other Relations," is brief and unimportant.

Locke has now completed his "plain historical account" of the origin of our ideas. The remainder of Book II, Chapters XXIX–XXXIII, is of the nature of an appendix. In these chapters Locke

discusses some practical considerations concerning ideas. He first treats (Chap. XXIX) of the distinction between clear and obscure, distinct and confused ideas. "Now every idea a man has being visibly what it is, and distinct from all other ideas but itself, that which makes it confused is, when it is such that it may as well be called by another name as that which it is expressed by; the difference which keeps the things (to be ranked under those two different names) distinct, and makes some of them belong rather to the one, and some of them to the other, of those names, being left out; and so the distinction, which was intended to be kept up by those different names, is quite lost."

In the next three chapters he considers three further distinctions in respect to ideas: real or fantastical, adequate or inadequate, and true or false. "By *real ideas,* I mean such as have a foundation in nature; such as have a conformity with the real being and existence of things, or with their archetypes. *Fantastical* or *chimerical,* I call such as have no foundation in nature, nor have any conformity with that reality of being to which they are tacitly referred as to their archetypes." Examining the several sorts of ideas in terms of this distinction, Locke finds that "our *simple ideas are all real,* all agree to the reality of things," no matter "whether they be only constant effects or else exact resemblances of something in the things themselves: the reality lying in that steady correspondence they have with the distinct constitutions of real beings. But whether they answer to those constitutions, as to causes or patterns, it matters not; it suffices that they are constantly produced by them." Mixed modes, made of consistent ideas, are real, since, "having no other reality but what they have in the minds of men, there is nothing more required to those kinds of ideas to make them real but that they be so framed that there be a possibility of existing conformable to them." And our "complex ideas of substances, being made all of them in reference to things existing without us, and intended to be representations of substances as they really are, are no farther real than as they are such combinations of simple ideas as are really united, and coexist in things without us." Real ideas may be adequate or inadequate. "Those I call *adequate* which perfectly represent those archetypes which the mind supposes them taken from; which it intends them to stand for, and to which it refers them. *Inadequate* ideas are such which are but a partial or incomplete representation of those archetypes to which they are referred." It is clear that simple

ideas must all be adequate, and ideas of modes, taken in themselves, adequate, while our ideas of substances, as referred to real essences, are not adequate.

Truth and falsehood properly belong only to propositions, for "our ideas being nothing but bare appearances or perception in our minds, cannot properly and simply in themselves be said to be true or false, no more than a single name of anything can be said to be true or false." Yet whenever "the mind refers any of its ideas to anything extraneous to them, they are then capable to be called true or false. Because the mind in such a reference makes a tacit supposition of their conformity to that thing: which supposition, as it happens to be true or false, so the ideas themselves come to be denominated. The most usual cases wherein this happens are these following: First, When the mind supposes any idea it has conformable to that in other men's minds, called by the same common name; v. g., when the mind intends or judges its ideas of justice, temperance, religion, to be the same with what other men give those names to. Secondly, When the mind supposes any idea it has in itself to be conformable to some real existence." In the first case any of our ideas may be false, in the second "none of them can be termed false, but only our complex ideas of substances."

Chapter XXXIII, "Of the Association of Ideas," was added to the fourth edition. Locke does not use association as a general law of the connection of ideas in the way Hobbes had done, or as Hume and Hartley and their successors, were to do later; on the contrary, he sharply distinguishes the "natural correspondence and connection" of our ideas, from association, "another connection of ideas wholly owing to chance or custom," ideas that "in themselves are not at all of kin" and "not allied by nature." Thus the chapter is an essay in the pathology of thought. Locke gives practical advice on "the prevention and cure of these wrong and unnatural combinations of ideas."

The final paragraph of this chapter introduces the reader to the discussion in Book III, Of Words. "Having thus given an account of the original, sorts, and extent of our *ideas,* with several other considerations about these (I know not whether I may say) instruments, or materials of our knowledge, the method I at first proposed to myself would now require that I should immediately proceed to show, what use the understanding makes of them, and what *knowledge* we have by them. This was that which, in the

first general view I had of this subject, was all that I thought I should have to do: but upon a nearer approach, I find that there is so close a connection between ideas and *words,* and our abstract ideas and general words have so constant a relation one to another, that it is impossible to speak clearly and distinctly of our knowledge, which all consists in propositions, without considering first the nature, use, and signification of language; which therefore must be the business of the next Book."

"The use of words is to be sensible marks of ideas, and the ideas they stand for are their proper and immediate signification." Though all things that exist are particulars, for the most part words are general; this "has not been the effect of neglect or chance, but of reason and necessity." For every particular thing to have a distinct peculiar name would be impossible, and "it would not serve to the chief end of language" which is communication. Communication involves general terms. How is it, then, that general words come to be made? "For since all things that exist are only particulars, how come we by general terms, or where find we those general natures they are supposed to stand for? Words become general by being made the signs of general ideas: and ideas become general by separating from them the circumstances of time and place, and any other ideas that may determine them to this or that particular existence. By this way of abstraction they are made capable of representing more individuals than one; each of which, having in it a conformity to that abstract idea, is (as we call it) of that sort." From this it follows that *"general* and *universal* belong not to the real existence of things; but are the inventions and creatures of the understanding, made by it for its own use, and concern only signs, whether words or ideas. Words are general, as has been said, when used for signs of general ideas; and so are applicable indifferently to many particular things: and ideas are general when they are set up as the representatives of many particular things: but universality belongs not to things themselves, which are all of them particular in their existence, even those words and ideas which in their signification are general. When therefore we quit particulars, the generals that rest are only creatures of our own making, their general nature being nothing but the capacity they are put into by the understanding of signifying or representing many particulars. For the signification they have is nothing but a relation that by the mind of man is added to them." While generals are the workmanship of the understand-

ing they "have their foundation in the similitude of things," the understanding "taking occasion, from the similitude it observes amongst them, to make abstract general ideas, and set them up in the mind with names annexed to them, as patterns or forms (for in that sense the word form has a very proper signification), to which, as particular things existing are found to agree, so they come to be of that species, have that denomination, or are put into that *classis*. . . . And what are the essences of those species, set out and marked by names, but those abstract ideas in the mind; which are, as it were, the bonds between particular things that exist, and the names they are to be ranked under?"

Essences, then, are of two fundamentally distinct sorts: "First, essence may be taken for the being of anything, whereby it is what it is. And thus the real internal, but generally in substances unknown, constitution of things, whereon their discoverable qualities depend, may be called their essence. This is the proper original signification of the word, as is evident from the formation of it; *essentia,* in its primary notation, signifying properly being. And in this sense it is still used when we speak of the essence of particular things without giving them any name.

"Secondly, the learning and disputes of the schools having been much busied about *genus* and *species,* the word essence has almost lost its primary signification; and instead of the real constitution of things, has been almost wholly applied to the artificial constitution of *genus* and *species.* It is true, there is ordinarily supposed a real constitution of the sorts of things; and it is past doubt there must be some real constitution, on which any collection of simple ideas coexisting must depend. But it being evident that things are ranked under names into sorts or species only as they agree to certain abstract ideas to which we have annexed those names, the essence of each genus or sort comes to be nothing but that abstract idea, which the general or *sortal* (if I may have leave so to call it from sort, as I do general from *genus*) name stands for. And this we shall find to be that which the word essence imports in its most familiar use. These two sorts of essences, I suppose, may not unfitly be termed, the one the *real,* the other the *nominal,* essence. . . . Essences being thus distinguished into nominal and real, we may farther observe, that in the species of simple ideas and modes, they are always the same: but in substances, always quite different. Thus a figure including a space between three lines, is the real as well as nominal essence of a

triangle; it being not only the abstract idea to which the general name is annexed, but the very *essentia,* or being of the thing itself, that foundation from which all its properties flow, and to which they are all inseparably annexed. But it is far otherwise concerning that parcel of matter which makes the ring on my finger, wherein these two essences are apparently different. For it is the real constitution of its insensible parts, on which depend all those properties of color, weight, fusibility, fixedness, etc., which makes it to be gold, or gives it a right to that name, which is therefore its nominal essence. Since nothing can be called gold but what has a conformity of qualities to that abstract complex idea to which that name is annexed. . . . This is that which in short I would say, viz., that all the great business of *genera* and *species,* and their essences, amounts to no more but this, that men making abstract ideas, and settling them in their minds, with names annexed to them, do thereby enable themselves to consider things, and discourse of them, as it were in bundles, for the easier and readier improvement and communication of their knowledge, which would advance but slowly, were their words and thoughts confined only to particulars."

Locke next treats (Chaps. IV–VI) of the names of simple ideas, of the names of mixed modes and relations, and of the names of substances. His chief points are: "Though all words, as I have shown, signify nothing immediately but the ideas in the mind of the speaker; yet upon a nearer survey, we shall find that the names of simple ideas, mixed modes (under which I comprise relations too), and natural substances, have each of them something peculiar, and different from the other. For example:

"First, the names of simple ideas and substances, with the abstract ideas in the mind which they immediately signify, intimate also some real existence, from which was derived their original pattern. But the names of *mixed modes* terminate in the idea that is in the mind, and lead not the thoughts any farther, as we shall see more at large in the following chapter.

"Secondly, the names of simple ideas and modes signify always the real as well as nominal essence of their species. But the names of natural substances signify rarely, if ever, anything but barely the nominal essences of those species, as we shall show in the chapter that treats of the names of substances in particular.

"Thirdly, the names of simple ideas are not capable of any definitions; the names of all complex ideas are."

In Chapter VI, "Of the Names of Substances," Locke develops the consequences of his distinction between real and nominal essence. In a letter to Molyneux Locke briefly restates the thesis of this chapter: "This I dare say: that there are real constitutions in things, from whence those simple ideas flow which we observe in them. And this I farther say: that there are real distinctions and differences in those real constitutions, one from another, whereby they are distinguished one from another, *whether we think of them, or name them, or no;* but that that whereby *we* distinguish and rank particular substances into sorts, is *not those real essences or inward constitutions,* but *such combinations of simple ideas as we observe in them.* This I designed to show in Lib. III, Chap. 6." (Quoted in A. C. Fraser's edition of the *Essay,* Vol. II, p. 87.)

The remaining chapters of Book III treat "Of Particles," "Of Abstract and Concrete Terms," "Of the Imperfection of Words," "Of the Abuse of Words," and "Of the Remedies of the Foregoing Imperfections and Abuses."]

BOOK IV: OF KNOWLEDGE AND PROBABILITY

CHAPTER I

OF KNOWLEDGE IN GENERAL

1. *Our knowledge conversant about our ideas only.*—Since the mind, in all its thoughts and reasonings, hath no other immediate object but its own ideas, which it alone does or can contemplate, it is evident that our knowledge is only conversant about them.

2. *Knowledge is the perception of the agreement or disagreement of two ideas.*—Knowledge then seems to me to be nothing but the perception of the connection of and agreement, or disagreement and repugnancy, of any of our ideas. In this alone it consists. Where this perception is, there is

knowledge; and where it is not, there, though we may fancy, guess, or believe, yet we always come short of knowledge. For, when we know that white is not black, what do we else but perceive that these two ideas do not agree? When we possess ourselves with the utmost security of the demonstration that the three angles of a triangle are equal to two right ones, what do we more but perceive that equality to two right ones does necessarily agree to, and is inseparable from, the three angles of a triangle?

3. *This agreement fourfold.*—But, to understand a little more distinctly, wherein this agreement or disagreement consists, I think we may reduce it all to these four sorts: (i) Identity, or diversity. (ii) Relation. (iii) Coexistence, or necessary connection. (iv) Real existence.

4. (i) *Of identity or diversity.*—First, as to the first sort of agreement or disagreement, viz., *identity,* or *diversity.* It is the first act of the mind, when it has any sentiments or ideas at all, to perceive its ideas, and, so far as it perceives them, to know each what it is, and thereby also to perceive their difference, and that one is not another. This is so absolutely necessary, that without it there could be no knowledge, no reasoning, no imagination, no distinct thoughts at all. By this the mind clearly and infallibly perceives each idea to agree with itself, and to be what it is; and all distinct ideas to disagree, i. e., the one not to be the other: and this it does without pains, labor, or deduction, but at first view, by its natural power of perception and distinction. And though men of art have reduced this into those general rules, "What is, is," and, "It is impossible for the same thing to be and not to be," for ready application in all cases where in there may be occasion to reflect on it; yet it is certain that the first exercise of this faculty is about particular ideas. A man infallibly knows, as soon as ever he has them in his mind, that the ideas he calls 'white' and 'round' are the very ideas they are, and that they are not other ideas which he calls 'red' or 'square.' Nor can any maxim or proposition in the world make him know it clearer or surer than he did before and without any such gen-

eral rule. This, then, is the first agreement or disagreement which the mind perceives in its ideas, which it always perceives at first sight; and if there ever happen any doubt about it, it will always be found to be about the names, and not the ideas themselves, whose identity and diversity will always be perceived as soon and as clearly as the ideas themselves are, nor can it possibly be otherwise.

5. (ii) *Of relations.*—Secondly, the next sort of agreement or disagreement the mind perceives in any of its ideas may, I think, be called *relative,* and is nothing but the perception of the relation between any two ideas, of what kind soever, whether substances, modes, or any other. For, since all distinct ideas must eternally be known not to be the same, and so be universally and constantly denied one of another; there could be no room for any positive knowledge at all, if we could not perceive any relation between our ideas, and find out the agreement or disagreement they have one with another, in several ways the mind takes of comparing them.

6. (iii) *Of coexistence.*—Thirdly, the third sort of agreement or disagreement to be found in our ideas, which the perception of the mind is employed about, is *coexistence,* or *non-coexistence in the same subject;* and this belongs particularly to substances. Thus when we pronounce concerning gold that it is fixed, our knowledge of this truth amounts to no more but this, that fixedness, or a power to remain in the fire unconsumed, is an idea that always accompanies and is joined with that particular sort of yellowness, weight, fusibility, malleableness and solubility in *aqua regia,* which make our complex idea, signified by the word gold.

7. (iv) *Of real existence.*—Fourthly, the fourth and last sort is that of *actual real existence agreeing to any idea.* Within these four sorts of agreement or disagreement is, I suppose, contained all the knowledge we have or are capable of; for, all the inquiries that we can make concerning any of our ideas, all that we know or can affirm concerning any of them, is, that it is or is not the same with some other; that it does or does not always coexist with some other idea in the same subject;

that it has this or that relation to some other idea; or that it has a real existence without the mind. Thus, "Blue is not yellow," is of identity. "Two triangles upon equal bases between two parallels are equal," is of relation. "Iron is susceptible of magnetical impressions," is of coexistence. "God is," is of real existence. Though identity and coexistence are truly nothing but relations, yet they are such peculiar ways of agreement or disagreement of our ideas, that they deserve well to be considered as distinct heads, and not under relation in general; since they are so different grounds of affirmation and negation, as will easily appear to any one who will but reflect on what is said in several places of this *Essay*. I should now proceed to examine the several degrees of our knowledge, but that it is necessary first to consider the different acceptations of the word knowledge.

8. *Knowledge actual or habitual.*—There are several ways wherein the mind is possessed of truth, each of which is called knowledge.

(i) There is *actual knowledge,* which is the present view the mind has of the agreement or disagreement of any of its ideas, or of the relation they have one to another.

(ii) A man is said to know any proposition which having been once laid before his thoughts, he evidently perceived the agreement or disagreement of the ideas whereof it consists; and so lodged it in his memory, that, whenever that proposition comes again to be reflected on, he, without doubt or hesitation, embraces the right side, assents to and is certain of the truth of it. This, I think, one may call *habitual knowledge;* and thus a man may be said to know all those truths which are lodged in his memory by a foregoing clear and full perception, whereof the mind is assured past doubt as often as it has occasion to reflect on them. For, our finite understandings being able to think clearly and distinctly but on one thing at once, if men had no knowledge of any more than what they actually thought on, they would all be very ignorant; and he that knew most would know but one truth, that being all he was able to think on at one time.

9. *Habitual knowledge twofold.*—Of habitual knowledge there are also, vulgarly speaking, two degrees:—

First, the one is of such truths laid up in the memory as, whenever they occur to the mind, it actually perceives the relation is between those ideas. And this is in all those truths whereof we have an intuitive knowledge, where the ideas themselves, by an immediate view, discover their agreement or disagreement one with another.

Secondly, the other is of such truths whereof the mind having been convinced, it retains the memory of the conviction without the proofs. Thus a man that remembers certainly that he once perceived the demonstration that the three angles of a triangle are equal to two right ones, is certain that he knows it, because he cannot doubt the truth of it. In his adherence to a truth where the demonstration by which it was at first known is forgot, though a man may be thought rather to believe his memory than really to know, and this way of entertaining a truth seemed formerly to me like something between opinion and knowledge, a sort of assurance which exceeds bare belief, for that relies on the testimony of another; yet, upon a due examination, I find it comes not short of perfect certainty, and is, in effect, true knowledge. That which is apt to mislead our first thoughts into a mistake in this matter is, that the agreement or disagreement of the ideas in this case is not perceived, as it was at first, by an actual view of all the intermediate ideas whereby the agreement or disagreement of those in the proposition was at first perceived; but by other intermediate ideas, that show the agreement or disagreement of the ideas contained in the proposition whose certainty we remember. For example: in this proposition, that "the three angles of a triangle are equal to two right ones," one who has seen and clearly perceived the demonstration of this truth, knows it to be true, when that demonstration has gone out of his mind, so that at present it is not actually in view and possibly cannot be recollected; but he knows it in a different way from what he did before. The agreement of the two ideas joined in that proposition is perceived, but

it is by the intervention of other ideas than those which at first produced that perception. He remembers, i. e., he knows (for remembrance is but the reviving of some past knowledge) that he was once certain of the truth of this proposition, that the three angles of a triangle are equal to two right ones. The immutability of the same relations between the same immutable things is now the idea that shows him that if the three angles of a triangle were once equal to two right ones, they will always be equal to two right ones. And hence he comes to be certain that what was once true in the case is always true; what ideas once agreed will always agree; and, consequently, what he once knew to be true he will always know to be true, as long as he can remember that he once knew it. Upon this ground it is that particular demonstrations in mathematics afford general knowledge. If, then, the perception that the same ideas will eternally have the same habitudes and relations be not a sufficient ground of knowledge, there could be no knowledge of general propositions in mathematics; for no mathematical demonstration would be any other than particular: and when a man had demonstrated any proposition concerning one triangle or circle, his knowledge would not reach beyond that particular diagram. If he would extend it farther, he must renew his demonstration in another instance before he could know it to be true in another like triangle, and so on: by which means one could never come to the knowledge of any general propositions. Nobody, I think, can deny that Mr. Newton certainly knows any proposition that he now at any time reads in his book to be true, though he has not in actual view that admirable chain of intermediate ideas whereby he at first discovered it to be true. Such a memory as that, able to retain such a train of particulars, may be well thought beyond the reach of human faculties, when the very discovery, perception, and laying together that wonderful connection of ideas is found to surpass most readers' comprehension. But yet it is evident the author himself knows the proposition to be true, remembering he once saw the connection of those

ideas, as certainly as he knows such a man wounded another remembering that he saw him run him through. But because the memory is not always so clear as actual perception, and does in all men more or less decay in length of time, this amongst other differences, is one which shows that demonstrative knowledge is much more imperfect than intuitive, as we shall see in the following chapter.

CHAPTER II

OF THE DEGREES OF OUR KNOWLEDGE

1. *Intuitive.*—All our knowledge consisting, as I have said, in the view the mind has of its own ideas, which is the utmost light and greatest certainty we, with our faculties and in our way of knowledge, are capable of, it may not be amiss to consider a little the degrees of its evidence. The different clearness of our knowledge seems to me to lie in the different way of perception the mind has of the agreement or disagreement of any of its ideas. For if we will reflect on our own ways of thinking, we will find that sometimes the mind perceives the agreement or disagreement of two ideas immediately by themselves, without the intervention of any other; and this, I think, we may call *intuitive knowledge.* For in this the mind is at no pains of proving or examining, but perceives the truth, as the eye doth light, only by being directed towards it. Thus the mind perceives that white is not black, that a circle is not a triangle, that three are more than two, and equal to one and two. Such kind of truths the mind perceives at the first sight of the ideas together, by bare intuition, without the intervention of any other idea; and this kind of knowledge is the clearest and most certain that human frailty is capable of. This part of knowledge is irresistible, and, like bright sunshine, forces itself immediately to be perceived as soon as ever the mind turns its view

that way; and leaves no room for hesitation, doubt or examination, but the mind is presently filled with the clear light of it. It is on this intuition that depends all the certainty and evidence of all our knowledge, which certainty everyone finds to be so great, that he cannot imagine, and therefore not require, a greater: for a man cannot conceive himself capable of a greater certainty, than to know that any idea in his mind is such as he perceives it to be; and that two ideas, wherein he perceives a difference, are different and not precisely the same. He that demands a greater certainty than this demands he knows not what, and shows only that he has a mind to be a sceptic without being able to be so. Certainty depends so wholly on this intuition, that in the next degree of knowledge, which I call demonstrative, this intuition is necessary in all the connections of the intermediate ideas, without which we cannot attain knowledge and certainty.

2. *Demonstrative.*—The next degree of knowledge is, where the mind perceives the agreement or disagreement of any ideas, but not immediately. Though wherever the mind perceives the agreement or disagreement of any of its ideas, there be certain knowledge; yet it does not always happen that the mind sees that agreement or disagreement which there is between them, even where it is discoverable; and in that case remains in ignorance, and at most gets no farther than a probable conjecture. The reason why the mind cannot always perceive presently the agreement or disagreement of two ideas, is, because those ideas concerning whose agreement or disagreement the inquiry is made, cannot by the mind be so put together as to show it. In this case then, when the mind cannot so bring its ideas together as, by their immediate comparison and, as it were, juxtaposition or application one to another, to perceive their agreement or disagreement, it is fain, *by the intervention of other ideas* (one or more, as it happens), to discover the agreement or disagreement which it searches; and this is that which we call *reasoning.* Thus the mind, being willing to know the agreement or disagreement in bigness between the three

angles of a triangle and two right ones, cannot, by an immediate view and comparing them, do it: because the three angles of a triangle cannot be brought at once, and be compared with any one or two angles; and so of this the mind has no immediate, no intuitive knowledge. In this case the mind is fain to find out some other angles, to which the three angles of a triangle have an equality; and finding those equal to two right ones, comes to know their equality to two right ones.

3. *Depends on proofs.*—Those intervening ideas which serve to show the agreement of any two others, are called *proofs;* and where the agreement or disagreement is by this means plainly and clearly perceived, it is called *demonstration,* it being *shown* to the understanding, and the mind made to see that it is so. A quickness in the mind to find out these intermediate ideas (that shall discover the agreement or disagreement of any other), and to apply them right, is, I suppose, that which is called *sagacity.*

4. *But not so easy as intuitive knowledge.*—This knowledge by intervening proofs though it be certain, yet the evidence of it is not altogether so clear and bright, nor the assent so ready, as in intuitive knowledge. For though in demonstration the mind does at last perceive the agreement or disagreement of the ideas it considers, yet it is not without pains and attention: there must be more than one transient view to find it. A steady application and pursuit are required to this discovery; and there must be a progression by steps and degrees before the mind can in this way arrive at certainty, and come to perceive the agreement or repugnancy between two ideas that need proofs and the use of reason to show it.

5. *Not without precedent doubt.*—Another difference between intuitive and demonstrative knowledge, is, that though in the latter all doubt be removed, when by the intervention of the intermediate ideas the agreement or disagreement is perceived; yet before the demonstration there was a doubt; which in intuitive knowledge cannot happen to the mind

that has its faculty of perception left to a degree capable of distinct ideas, no more than it can be a doubt to the eye (that can distinctly see white and black), whether this ink and this paper be all of a color. If there be sight in the eyes, it will at first glimpse, without hesitation, perceive the words printed on this paper, different from the color of the paper: and so, if the mind have the faculty of distinct perception, it will perceive the agreement or disagreement of those ideas that produce intuitive knowledge. If the eyes have lost the faculty of seeing, or the mind of perceiving, we in vain inquire after the quickness of sight in one, or clearness of perception in the other.

6. *Not so clear.*—It is true, the perception produced by demonstration is also very clear; yet it is often with a great abatement of that evident luster and full assurance that always accompany that which I call intuitive; like a face reflected by several mirrors one to another, where, as long as it retains the similitude and agreement with the object, it produces a knowledge; but it is still in every successive reflection with a lessening of that perfect clearness and distinctness which is in the first, till at last, after many removes, it has a great mixture of dimness, and is not at first sight so knowable, especially to weak eyes. Thus it is with knowledge made out by a long train of proof.

7. *Each step must have intuitive evidence.*—Now, in every step reason makes in demonstrative knowledge, there is an intuitive knowledge of that agreement or disagreement it seeks with the next intermediate idea, which it uses as a proof: for if it were not so, that yet would need a proof; since without the perception of such agreement or disagreement there is no knowledge produced. If it be perceived by itself, it is intuitive knowledge; if it cannot be perceived by itself, there is need of some intervening idea, as a common measure, to show their agreement or disagreement. By which it is plain that every step in reasoning that produces knowledge has intuitive certainty; which when the mind perceives, there is no more required but to remember it, to make the agreement

or disagreement of the ideas concerning which we inquire, visible and certain. So that to make anything a demonstration, it is necessary to perceive the immediate agreement of the intervening ideas, whereby the agreement or disagreement of the two ideas under examination (whereof the one is always the first, and the other the last in the account) is found. This intuitive perception of the agreement or disagreement of the intermediate ideas, in each step and progression of the demonstration, must also be carried exactly in the mind, and a man must be sure that no part is left out: which, because in long deductions, and the use of many proofs, the memory does not always so readily and exactly retain; therefore, it comes to pass, that this is more imperfect than intuitive knowledge, and men embrace often falsehood for demonstrations.

8. *Hence the mistake, 'ex præcognitis et præconcessis.'*—The necessity of this intuitive knowledge, in each step of scientifical or demonstrative reasoning, gave occasion, I imagine, to that mistaken axiom, that all reasoning was *ex præcognitis et præconcessis;* which, how far it is a mistake, I shall have occasion to show more at large when I come to consider propositions, and particularly those propositions which are called maxims; and to show that it is by a mistake that they are supposed to be the foundations of all our knowledge and reasonings.

9. *Demonstration not limited to quantity.*—[It has been generally taken for granted that mathematics alone are capable of demonstrative certainty; but to have such an agreement or disagreement as may intuitively be perceived, being, as I imagine, not the privilege of the ideas of number, extension, and figure alone, it may possibly be the want of due method and application in us, and not of sufficient evidence in things, that demonstration has been thought to have so little to do in other parts of knowledge, and been scarce so much as aimed at by any but mathematicians.] For, whatever ideas we have wherein the mind can perceive the immediate agreement or disagreement that is between them,

there the mind is capable of intuitive knowledge; and where it can perceive the agreement or disagreement of any two ideas, by an intuitive perception of the agreement or disagreement they have with any intermediate ideas, there the mind is capable of demonstration, which is not limited to ideas of extension, figure, number, and their modes.

10. *Why it has been so thought.*—The reason why it has been generally sought for and supposed to be only in those, I imagine, has been not only the general usefulness of those sciences, but because, in comparing their equality or excess, the modes of numbers have every the least difference very clear and perceivable: and though in extension every the least excess is not so perceptible, yet the mind has found out ways to examine and discover demonstratively the just equality of two angles, or extensions, or figures; and both these, i. e., numbers and figures, can be set down by visible and lasting marks, wherein the ideas under consideration are perfectly determined; which for the most part they are not, where they are marked only by names and words.

11. But in other simple ideas, whose modes and differences are made and counted by degrees, and not quantity, we have not so nice and accurate a distinction of their differences as to perceive or find ways to measure their just equality or the least differences. For, those other simple ideas being appearances of sensations produced in us by the size, figure, number, and motion of minute corpuscles singly insensible, their different degrees also depend upon the variation of some or all of those causes; which, since it cannot be observed by us in particles of matter whereof each is too subtile to be perceived, it is impossible for us to have any exact measures of the different degrees of these simple ideas. For, supposing the sensation or idea we name whiteness be produced in us by a certain number of globules, which, having a verticity about their own centers, strike upon the *retina* of the eye with a certain degree of rotation, as well as progressive swiftness; it will hence easily follow that the more the superficial parts of any body are so ordered as to reflect the

greater number of globules of light, and to give them the proper rotation which is fit to produce this sensation of white in us, the more white will that body appear that from an equal space sends to the *retina* the greater number of such corpuscles with that peculiar sort of motion. I do not say, that the nature of light consists in very small round globules, nor of whiteness in such a texture of parts as gives a certain rotation to these globules when it reflects them; for I am not now treating physically of light or colors; but this I think I may say, that I cannot (and I would be glad any one would make intelligible that he did) conceive how bodies without us can any ways affect our senses but by the immediate contact of the sensible bodies themselves, as in tasting and feeling, or the impulse of some sensible particles coming from them, as in seeing, hearing, and smelling; by the different impulse of which parts, caused by their different size, figure, and motion, the variety of sensations is produced in us.

12. Whether then they be globules or no; or whether they have a verticity about their own centers that produces the idea of whiteness in us; this is certain, that the more particles of light are reflected from a body, fitted to give them that peculiar motion which produces the sensation of whiteness in us, and possibly, too, the quicker that peculiar motion is, the whiter does the body appear from which the greatest number are reflected, as is evident in the same piece of paper put in the sunbeams, in the shade, and in a dark hole; in each of which it will produce in us the idea of whiteness in far different degrees.

13. Not knowing therefore what number of particles, nor what motion of them, is fit to produce any precise degree of whiteness, we cannot demonstrate the certain equality of any two degrees of whiteness; because we have no certain standard to measure them by, nor means to distinguish every the least real difference; the only help we have being from our senses, which in this point fail us. But where the difference is so great as to produce in the mind clearly distinct ideas, whose differences can be perfectly retained, there these ideas

of colors, as we see in different kinds, as blue and red, are as capable of demonstration as ideas of number and extension. What I have here said of whiteness and colors, I think, holds true in all secondary qualities and their modes.

14. *Sensitive knowledge of particular existence.*—These two, viz. intuition and demonstration, are the degrees of our knowledge; whatever comes short of one of these, with what assurance soever embraced, is but faith or opinion, but not knowledge, at least in all general truths. There is, indeed, another perception of the mind employed about the particular existence of finite beings without us; which, going beyond bare probability, and yet not reaching perfectly to either of the foregoing degrees of certainty, passes under the name of knowledge. There can be nothing more certain than that the idea we receive from an external object is in our minds: this is intuitive knowledge. But whether there be anything more than barely that idea in our minds, whether we can thence certainly infer the existence of anything without us which corresponds to that idea, is that whereof some men think there may be a question made; because men may have such ideas in their minds when no such thing exists, no such object affects their senses. But yet here, I think, we are provided with an evidence that puts us past doubting; for I ask anyone whether he be not invincibly conscious to himself of a different perception when he looks on the sun by day, and thinks on it by night; when he actually tastes wormwood, or smells a rose, or only thinks on that savor or odor? We as plainly find the difference there is between any idea revived in our minds by our own memory, and actually coming into our minds by our senses, as we do between any two distinct ideas. If anyone say, "A dream may do the same thing, and all these ideas may be produced in us without any external objects;" he may please to dream that I make him this answer: (i) That it is no great matter whether I remove his scruple or no; where all is but dream, reasoning and arguments are of no use, truth and knowledge nothing. (ii) That I believe he will allow a very manifest difference

between dreaming of being in the fire, and being actually in it. But yet if he be resolved to appear so sceptical as to maintain that what I call 'being actually in the fire' is nothing but a dream, and that we cannot thereby certainly know that any such thing as fire actually exists without us; I answer that we certainly finding that pleasure or pain follows upon the application of certain objects to us, whose existence we perceive, or dream that we perceive, by our senses; this certainty is as great as our happiness or misery, beyond which we have no concernment to know or to be. So that, I think, we may add to the two former sorts of knowledge this also, of the existence of particular external objects by that perception and consciousness we have of the actual entrance of ideas from them, and allow these three degrees of knowledge, viz., intuitive, demonstrative, and sensitive; in each of which there are different degrees and ways of evidence and certainty.

15. *Knowledge not always clear where the ideas are so.*— But since our knowledge is founded on and employed about our ideas only, will it not follow from thence that it is conformable to our ideas; and that where our ideas are clear and distinct, or obscure and confused, our knowledge will be so too? To which I answer, No: for our knowledge consisting in the perception of the agreement or disagreement of any two ideas, its clearness or obscurity consists in the clearness or obscurity of that perception, and not in the clearness or obscurity of the ideas themselves: v. g., a man that has as clear ideas of the angles of a triangle, and of equality to two right ones, as any mathematician in the world, may yet have but a very obscure perception of their agreement, and so have but a very obscure knowledge of it. [But ideas which by reason of their obscurity or otherwise are confused, cannot produce any clear or distinct knowledge; because as far as any ideas are confused, so far the mind cannot perceive clearly whether they agree or disagree. Or, to express the same thing in a way less apt to be misunderstood, he that hath not determined ideas to the words he uses cannot make propositions of them, of whose truth he can be certain.]

CHAPTER III

OF THE EXTENT OF HUMAN KNOWLEDGE

1. KNOWLEDGE, as has been said, lying in the perception of the agreement or disagreement of any of our ideas, it follows from hence that,

(i) *No farther than we have ideas.*—First, we can have knowledge no farther than we have ideas.

2. (ii) *No farther than we can perceive their agreement or disagreement.*—Secondly, that we can have no knowledge farther than we can have perception of that agreement or disagreement: which perception being, (1) either by intuition, or the immediate comparing any two ideas, or (2) by reason, examining the agreement or disagreement of two ideas by the intervention of some others, or, (3) by sensation, perceiving the existence of particular things; hence it also follows,

3. (iii) *Intuitive knowledge extends itself not to all the relations of all our ideas.*—Thirdly, that we cannot have an intuitive knowledge that shall extend itself to all our ideas, and all that we would know about them; because we cannot examine and perceive all the relations they have one to another by juxtaposition, or an immediate comparison one with another. Thus having the ideas of an obtuse and an acute-angled triangle, both drawn from equal bases and between parallels, I can by intuitive knowledge perceive the one not to be the other, but cannot that way know whether they be equal or no: because their agreement or disagreement in equality can never be perceived by an immediate comparing them; the difference of figure makes their parts incapable of an exact immediate application; and therefore there is need of some intervening qualities to measure them by, which is demonstration or rational knowledge.

4. (iv) *Nor demonstrative knowledge.*—Fourthly, it follows also, from what is above observed, that our rational knowledge cannot reach to the whole extent of our ideas:

because between two different ideas we would examine, we cannot always find such mediums as we can connect one to another with an intuitive knowledge, in all the parts of the deduction; and wherever that fails, we come short of knowledge and demonstration.

5. (v) *Sensitive knowledge narrower than either.*—Fifthly, sensitive knowledge, reaching no farther than the existence of things actually present to our senses, is yet much narrower than either of the former.

6. (vi) *Our knowledge therefore narrower than our ideas.*—From all which it is evident that the extent of our knowledge comes not only short of the reality of things, but even of the extent of our own ideas. Though our knowledge be limited to our ideas, and cannot exceed them either in extent or perfection; and though these be very narrow bounds in respect of the extent of all Being, and far short of what we may justly imagine to be in some even created understandings not tied down to the dull and narrow information that is to be received from some few and not very acute ways of perception, such as are our senses; yet it would be well with us if our knowledge were but as large as our ideas, and there were not many doubts and inquiries concerning the ideas we have, whereof we are not, nor I believe ever shall be in this world, resolved. Nevertheless, I do not question but that human knowledge, under the present circumstances of our beings and constitutions, may be carried much farther than it hitherto has been, if men would sincerely, and with freedom of mind, employ all that industry and labor of thought in improving the means of discovering truth which they do for the coloring or support of falsehood, to maintain a system, interest, or party they are once engaged in. But yet, after all, I think I may, without injury to human perfection, be confident that our knowledge would never reach to all we might desire to know concerning those ideas we have; nor be able to surmount all the difficulties, and resolve all the questions that might arise concerning any of them. We have the ideas of a square, a circle, and equality; and yet, perhaps,

shall never be able to find a circle equal to a square, and certainly know that it is so. We have the ideas of matter and thinking, but possibly shall never be able to know whether [any mere material being] thinks or no; it being impossible for us, by the contemplation of our own ideas without revelation, to discover whether Omnipotency has not given to some systems of matter, fitly disposed, a power to perceive and think, or else joined and fixed to matter, so disposed, a thinking immaterial substance: it being, in respect of our notions, not much more remote from our comprehension to conceive that God can, if He pleases, superadd to matter a faculty of thinking, than that He should superadd to it another substance with a faculty of thinking; since we know not wherein thinking consists, nor to what sort of substances the Almighty has been pleased to give that power which cannot be in any created being but merely by the good pleasure and bounty of the Creator. . . .

But, to return to the argument in hand: our knowledge, I say, is not only limited to the paucity and imperfections of the ideas we have, and which we employ it about, but even comes short of that, too: but how far it reaches, let us now inquire.

7. *How far our knowledge reaches.*—The affirmations or negations we make concerning the ideas we have, may, as I have before intimated in general, be reduced to these four sorts, viz., identity, coexistence, relation, and real existence. I shall examine how far our knowledge extends in each of these:—

8. (i) *Our knowledge of identity and diversity, as far as our ideas.*—First, as to identity and diversity, in this way of the agreement or disagreement of ideas, our intuitive knowledge is as far extended as our ideas themselves; and there can be no idea in the mind which it does not presently, by an intuitive knowledge, perceive to be what it is, and to be different from any other.

9. (ii) *Of coexistence, a very little way.*—Secondly, as to the second sort, which is the agreement or disagreement of our ideas in coexistence, in this our knowledge is very short,

though in this consists the greatest and most material part of our knowledge concerning substances. For our ideas of the species of substances being, as I have showed, nothing but certain collections of simple ideas united in one subject, and so coexisting together; v. g., our idea of flame is a body hot, luminous, and moving upward; of gold, a body heavy to a certain degree, yellow, malleable, and fusible. These, or some such complex ideas as these in men's minds, do these two names of the different substances, flame and gold, stand for. When we would know anything farther concerning these, or any other sort of substances, what do we inquire but what other qualities or powers these substances have or have not? Which is nothing else but to know what other simple ideas do or do not coexist with those that make up that complex idea.

10. *Because the connection between most simple ideas is unknown.*—This, how weighty and considerable a part soever of human science, is yet very narrow, and scarce any at all. The reason whereof is, that the simple ideas whereof our complex ideas of substances are made up are, for the most part, such as carry with them, in their own nature, no visible necessary connection or inconsistency with any other simple ideas, whose coexistence with them we would inform ourselves about.

11. *Especially of secondary qualities.*—The ideas that our complex ones of substances are made up of, and about which our knowledge concerning substances is most employed, are those of their secondary qualities; which depending all (as has been shown) upon the primary qualities of their minute and insensible parts, or, if not upon them, upon something yet more remote from our comprehension, it is impossible we should know which have a necessary union or inconsistency one with another: for, not knowing the root they spring from, not knowing what size, figure, and texture of parts they are on which depend and from which result those qualities which make our complex idea of gold, it is impossible we should know what other qualities result from or are incom-

patible with the same constitution of the insensible parts of gold; and so, consequently, must always coexist with that complex idea we have of it, or else are inconsistent with it.

12. *Because all connection between any secondary and primary qualities is undiscoverable.*—Besides this ignorance of the primary qualities of the insensible parts of bodies, on which depend all their secondary qualities, there is yet another and more incurable part of ignorance, which sets us more remote from a certain knowledge of the coexistence or in-coexistence (if I may so say) of different ideas in the same subject; and that is, that there is no discoverable connection between any secondary quality and those primary qualities that it depends on.

13. That the size, figure, and motion of one body should cause a change in the size, figure, and motion of another body, is not beyond our conception. The separation of the parts of one body upon the intrusion of another, and the change from rest to motion upon impulse; these, and the like, seem to have some connection one with another. And if we knew these primary qualities of bodies, we might have reason to hope we might be able to know a great deal more of these operations of them one upon another; but our minds not being able to discover any connection betwixt these primary qualities of bodies and the sensations that are produced in us by them, we can never be able to establish certain and undoubted rules of the consequence or coexistence of any secondary qualities, though we could discover the size, figure, or motion of those invisible parts which immediately produce them. We are so far from knowing what figure, size, or motion of parts produce a yellow color, a sweet taste, or a sharp sound, that we can by no means conceive how any size, figure, or motion of any particles can possibly produce in us the idea of any color, taste, or sound whatsoever; there is no conceivable connection between the one and the other.

14. In vain, therefore, shall we endeavor to discover by our ideas (the only true way of certain and universal knowledge) what other ideas are to be found constantly joined

with that of our complex idea of any substance: since we neither know the real constitution of the minute parts on which their qualities do depend; nor, did we know them, could we discover any necessary connection between them and any of the secondary qualities; which is necessary to be done before we can certainly know their necessary coexistence. So that, let our complex idea of any species of substances be what it will, we can hardly, from the simple ideas contained in it, certainly determine the necessary coexistence of any other quality whatsoever. Our knowledge in all these inquiries reaches very little farther than our experience. Indeed some few of the primary qualities have a necessary dependence and visible connection one with another, as figure necessarily supposes extension, receiving or communicating motion by impulse supposes solidity. But though these and perhaps some others of our ideas have, yet there are so few of them that have, a visible connection one with another, that we can by intuition or demonstration discover the coexistence of very few of the qualities that are to be found united in substances; and we are left only to the assistance of our senses to make known to us what qualities they contain. For of all the qualities that are coexistent in any subject, without this dependence and evident connection of their ideas one with another, we cannot know certainly any two to coexist any farther than experience, by our senses, informs us. Thus though we see the yellow color, and upon trial find the weight, malleableness, fusibility, and fixedness that are united in a piece of gold; yet, because no one of these ideas has any evident dependence or necessary connection with the other, we cannot certainly know that where any four of these are the fifth will be there also, how highly probable soever it may be; because the highest probability amounts not to certainty, without which there can be no true knowledge. For this coexistence can be no farther known than it is perceived; and it cannot be perceived but either in particular subjects by the observation of our senses, or in general by the necessary connection of the ideas themselves.

15. *Of repugnancy to coexist, larger.*—As to incompatibility or repugnancy to coexistence, we may know that any subject may have of each sort of primary qualities but one particular at once: v. g., each particular extension, figure, number of parts, motion, excludes all other of each kind. The like also is certain of all sensible ideas peculiar to each sense; for whatever of each kind is present in any subject, excludes all other of that sort: v. g., no one subject can have two smells or two colors at the same time. To this, perhaps, will be said, "Has not an opal, or the infusion of *lignum nephriticum,* two colors at the same time?" To which I answer, that these bodies to eyes differently placed, may at the same time afford different colors; but I take liberty also to say that to eyes differently placed it is different parts of the object that reflect the particles of light; and therefore it is not the same part of the object, and so not the very same subject, which at the same time appears both yellow and azure. For it is as impossible that the very same particle of any body should at the same time differently modify or reflect the rays of light, as that it should have two different figures and textures at the same time.

16. *Of the coexistence of powers, a very little way.*—But as to the power of substances to change the sensible qualities of other bodies, which makes a great part of our inquiries about them, and is no inconsiderable branch of our knowledge; I doubt, as to these, whether our knowledge reaches much farther than our experience; or whether we can come to the discovery of most of these powers, and be certain that they are in any subject, by the connection with any of those ideas which to us make its essence. Because the active and passive powers of bodies, and their ways of operating, consisting in a texture and motion of parts which we cannot by any means come to discover, it is but in very few cases we can be able to perceive their dependence on or repugnance to any of those ideas which make our complex one of that sort of things. I have here instanced in the corpuscularian hypothesis, as that which is thought to go farthest in an intelligible

explication of those qualities of bodies; and I fear the weakness of human understanding is scarce able to substitute another, which will afford us a fuller and clearer discovery of the necessary connection and coexistence of the powers which are to be observed united in several sorts of them. This at least is certain, that whichever hypothesis be clearest and truest (for of that it is not my business to determine), our knowledge concerning corporeal substances will be very little advanced by any of them, till we are made to see what qualities and powers of bodies have a necessary connection or repugnancy one with another; which, in the present state of philosophy, I think, we know but to a very small degree: and I doubt whether, with those faculties we have, we shall ever be able to carry our general knowledge (I say not particular experience) in this part much farther. [Experience is that which in this part we must depend on. And it were to be wished that it were more improved. We find the advantages some men's generous pains have this way brought to the stock of natural knowledge. And if others, especially the philosophers by fire, who pretend to it, had been so wary in their observations and sincere in their reports as those who call themselves philosophers ought to have been, our acquaintance with the bodies here about us, and our insight into their powers and operations, had been yet much greater.]

17. *Of spirits yet narrower.*—If we are at a loss in respect of the powers and operations of bodies, I think it is easy to conclude we are much more in the dark in reference to spirits, whereof we naturally have no ideas but what we draw from that of our own, by reflecting on the operations of our own souls within us, as far as they can come within our observation. But how inconsiderable a rank the spirits that inhabit our bodies hold amongst those various, and possibly innumerable, kinds of nobler beings; and how far short they come of the endowments and perfections of cherubims and seraphims, and infinite sorts of spirits above us, is what by a transient hint, in another place, I have offered to my reader's consideration.

18. (iii) *Of other relations, it is not easy to say how far.*—As to the third sort of our knowledge, viz., the agreement or disagreement of any of our ideas in any other relation: this, as it is the largest field of our knowledge, so it is hard to determine how far it may extend; because the advances that are made in this part of knowledge depending on our sagacity in finding intermediate ideas that may show the relations and habitudes of ideas, whose coexistence is not considered, it is a hard matter to tell when we are at an end of such discoveries, and when reason has all the helps it is capable of for the finding of proofs, or examining the agreement or disagreement of remote ideas. They that are ignorant of algebra, cannot imagine the wonders in this kind are to be done by it: and what farther improvements and helps, advantageous to other parts of knowledge, the sagacious mind of man may yet find out, it is not easy to determine. This at least I believe, that the ideas of quantity are not those alone that are capable of demonstration and knowledge; and that other, and perhaps more useful, parts of contemplation would afford us certainty, if vices, passions, and domineering interest did not oppose or menace such endeavors. . . .

21. (iv) *Of real existence.*—Fourthly, as to the fourth sort of our knowledge, viz., of the real actual existence of things, we have an *intuitive* knowledge of our own existence; and a *demonstrative* knowledge of the existence of a God; of the existence of anything else, we have no other but a *sensitive* knowledge, which extends not beyond the objects present to our senses.

CHAPTER IV

OF THE REALITY OF HUMAN KNOWLEDGE

1. *Objection. Knowledge placed in ideas may be all bare vision.*—I doubt not but my reader by this time may be apt to think that I have been all this while only building a castle in the air; and be ready to say to me, "To what purpose all

this stir? 'Knowledge,' say you, 'is only the perception of the agreement or disagreement of our own ideas;' but who knows what those ideas may be? Is there anything so extravagant as the imaginations of men's brains? Where is the head that has no chimeras in it? Or if there be a sober and a wise man, what difference will there be, by your rules, between his knowledge, and that of the most extravagant fancy in the world? They both have their ideas, and perceive their agreement and disagreement one with another. If there be any difference between them, the advantage will be on the warm-headed man's side, as having the more ideas, and the more lively. And so, by your rules, he will be the more knowing. If it be true that all knowledge lies only in the perception of the agreement or disagreement of our own ideas, the visions of an enthusiast, and the reasonings of a sober man, will be equally certain. It is no matter how things are: so a man observe but the agreement of his own imaginations, and talk conformably, it is all truth, all certainty. Such castles in the air will be as strongholds of truth as the demonstrations of Euclid. That an harpy is not a centaur, is by this way as certain knowledge, and as much a truth, as that a square is not a circle.

"But of what use is all this fine knowledge of men's own imaginations to a man that inquires after the reality of things? It matters not what men's fancies are, it is the knowledge of things that is only to be prized; it is this alone gives a value to our reasonings, and preference to one man's knowledge over another's, that it is of things as they really are, and not of dreams and fancies."

2. *Answer. Not so where ideas agree with things.*—To which I answer, that if our knowledge of our ideas terminate in them, and reach no farther, where there is something farther intended, our most serious thoughts will be of little more use than the reveries of a crazy brain; and the truths built thereon of no more weight than the discourses of a man who sees things clearly in a dream, and with great assurance utters them. But I hope before I have done to make

it evident that this way of certainty, by the knowledge of our own ideas, goes a little farther than bare imagination; and I believe it will appear that all the certainty of general truths a man has lies in nothing else.

3. It is evident the mind knows not things immediately, but only by the intervention of the ideas it has of them. Our knowledge therefore is real only so far as there is a conformity between our ideas and the reality of things. But what shall be here the criterion? How shall the mind, when it perceives nothing but its own ideas, know that they agree with things themselves? This, though it seems not to want difficulty, yet I think there be two sorts of ideas that we may be assured agree with things.

4. *As* (i) *all simple ideas do.*—First, the first are simple ideas, which since the mind, as has been showed, can by no means make to itself, must necessarily be the product of things operating on the mind in a natural way, and producing therein those perceptions which by the wisdom and will of our Maker they are ordained and adapted to. From whence it follows that simple ideas are not fictions of our fancies, but the natural and regular productions of things without us really operating upon us, and so carry with them all the conformity which is intended, or which our state requires; for they represent to us things under those appearances which they are fitted to produce in us, whereby we are enabled to distinguish the sorts of particular substances, to discern the states they are in, and so to take them for our necessities, and apply them to our uses. Thus the idea of whiteness or bitterness, as it is in the mind, exactly answering that power which is in any body to produce it there, has all the real conformity it can or ought to have with things without us. And this conformity between our simple ideas and the existence of things is sufficient for real knowledge.

5. (ii) *All complex ideas except of substances.*—Secondly, all our complex ideas except those of substances being archetypes of the mind's own making, not intended to be the copies of anything, nor referred to the existence of any thing,

as to their originals, cannot want any conformity necessary to real knowledge. For that which is not designed to represent anything but itself, can never be capable of a wrong representation, nor mislead us from the true apprehension of any thing by its dislikeness to it; and such, excepting those of substances, are all our complex ideas: which, as I have showed in another place, are combinations of ideas which the mind by its free choice puts together without considering any connection they have in nature. And hence it is, that in all these sorts the ideas themselves are considered as the archetypes, and things no otherwise regarded but as they are conformable to them. So that we cannot but be infallibly certain that all the knowledge we attain concerning these ideas is real, and reaches things themselves; because in all our thoughts, reasonings, and discourses of this kind, we intend things no farther than as they are conformable to our ideas. So that in these we cannot miss of a certain and undoubted reality.

6. *Hence the reality of mathematical knowledge.*—I doubt not but it will be easily granted that the knowledge we have of mathematical truths, is not only certain but real knowledge, and not the bare empty vision of vain, insignificant chimeras of the brain; and yet, if we will consider, we shall find that it is only of our own ideas. The mathematician considers the truth and properties belonging to a rectangle or circle, only as they are in idea in his own mind. For it is possible he never found either of them existing mathematically, i. e. precisely true, in his life. But yet the knowledge he has of any truths or properties belonging to a circle, or any other mathematical figure, are never the less true and certain even of real things existing; because real things are no farther concerned, nor intended to be meant by any such propositions, than as things really agree to those archetypes in his mind. Is it true of the idea of a triangle, that its three angles are equal to two right ones? It is true also of a triangle wherever it really exists. Whatever other figure exists, that it is not exactly answerable to that idea of a triangle in his mind, is not at all concerned

in that proposition. And therefore he is certain all his knowledge concerning such ideas is real knowledge: because, intending things no farther than they agree with those his ideas, he is sure what he knows concerning those figures when they have barely an ideal existence in his mind, will hold true of them also when they have a real existence in matter; his consideration being barely of those figures, which are the same wherever or however they exist.

7. *And of moral.*—And hence it follows that moral knowledge is as capable of real certainty as mathematics. For certainty being but the perception of the agreement or disagreement of our ideas, and demonstration nothing but the perception of such agreement by the intervention of other ideas or mediums, our moral ideas as well as mathematical being archetypes themselves, and so adequate and complete ideas, all the agreement or disagreement which we shall find in them will produce real knowledge, as well as in mathematical figures.

8. *Existence not required to make it real.*—[For the attaining of knowledge and certainty, it is requisite that we have determined ideas:] and to make our knowledge real, it is requisite that the ideas answer their archetypes. Nor let it be wondered that I place the certainty of our knowledge in the consideration of our ideas with so little care and regard (as it may seem) to the real existence of things: since most of those discourses which take up the thoughts and engage the disputes of those who pretend to make it their business to inquire after truth and certainty, will, I presume, upon examination, be found to be general propositions and notions in which existence is not at all concerned. All the discourses of the mathematicians about the squaring of a circle, conic sections, or any other part of mathematics, concern not the existence of any of those figures; but their demonstrations, which depend on their ideas, are the same, whether there be any square or circle existing in the world, or no. In the same manner, the truth and certainty of moral discourses abstracts from the lives of men, and the existence of those virtues in the

world whereof they treat; nor are Tully's *Offices* less true because there is nobody in the world that exactly practises his rules, and lives up to that pattern of a virtuous man which he has given us, and which existed nowhere when he writ but in idea. If it be true in speculation, i. e. in idea, that murder deserves death, it will also be true in reality of any action that exists conformable to that idea of murder. As for other actions, the truth of that proposition concerns them not. And thus it is of all other species of things which have no other essences but those ideas which are in the minds of men.

9. *Nor will it be less true or certain because moral ideas are of our own making and naming.*—But it will here be said, that if moral knowledge be placed in the contemplation of our own moral ideas, and those, as other modes, be of our own making, what strange notions will there be of justice and temperance! What confusion of virtues and vices, if everyone may make what ideas of them he pleases! No confusion nor disorder in the things themselves, nor the reasonings about them; no more than (in mathematics) there would be a disturbance in the demonstration, or a change in the properties of figures and their relations one to another, if a man should make a triangle with four corners, or a *trapezium* with four right angles: that is, in plain English, change the names of the figures, and call that by one name which mathematicians called ordinarily by another. For let a man make to himself the idea of a figure with three angles, whereof one is a right one, and call it, if he please, equilaterum or trapezium, or anything else, the properties of and demonstrations about that idea will be the same as if he called it a rectangular triangle. I confess, the change of the name by the impropriety of speech will at first disturb him who knows not what idea it stands for; but as soon as the figure is drawn, the consequences and demonstrations are plain and clear. Just the same is it in moral knowledge: let a man have the idea of taking from others, without their consent, what their honest industry has possessed them of, and call this

justice, if he please. He that takes the name here without the idea put to it, will be mistaken by joining another idea of his own to that name; but strip the idea of that name, or take it such as it is in the speaker's mind, and the same things will agree to it as if you called it injustice. Indeed, wrong names in moral discourses breed usually more disorder, because they are not so easily rectified as in mathematics, where the figure once drawn and seen makes the name useless and of no force. For what need of a sign when the thing signified is present and in view? But in moral names that cannot be so easily and shortly done, because of the many decompositions that go to the making up the complex ideas of those modes. But yet, for all this, the miscalling of any of those ideas contrary to the usual signification of the words of that language, hinders not but that we may have certain and demonstrative knowledge of their several agreements and disagreements, if we will carefully, as in mathematics, keep to the same precise ideas, and trace them in their several relations one to another without being led away by their names. If we but separate the idea under consideration from the sign that stands for it, our knowledge goes equally on in the discovery of real truth and certainty, whatever sounds we make use of.

10. *Misnaming disturbs not the certainty of the knowledge.*—One thing more we are to take notice of, that where God, or any other law-maker, hath defined any moral names, there they have made the essence of that species to which that name belongs; and there it is not safe to apply or use them otherwise: but in other cases it is bare impropriety of speech to apply them contrary to the common usage of the country. But yet even this too disturbs not the certainty of that knowledge, which is still to be had by a due contemplation and comparing of those even nick-named ideas.

11. (iii) *Ideas of substances have their archetypes without us.*—Thirdly, there is another sort of complex ideas, which being referred to archetypes without us may differ from them, and so our knowledge about them may come short of being

real. Such are our ideas of substances, which consisting of a collection of simple ideas, supposed taken from the works of nature, may yet vary from them, by having more or different ideas united in them than are to be found united in the things themselves: from whence it comes to pass that they may and often do fail of being exactly conformable to things themselves.

12. *So far as they agree with those, so far our knowledge concerning them is real.*—I say, then, that to have ideas of substances which, by being conformable to things, may afford us real knowledge, it is not enough, as in modes, to put together such ideas as have no inconsistence, though they did never before so exist; v. g., the ideas of sacrilege or perjury, etc., were as real and true ideas before as after the existence of any such fact. But our ideas of substances, being supposed copies, and referred to archetypes without us, must still be taken from something that does or has existed; they must not consist of ideas put together at the pleasure of our thoughts without any real pattern they were taken from, though we can perceive no inconsistence in such a combination. The reason whereof is, because we knowing not what real constitution it is of substances whereon our simple ideas depend, and which really is the cause of the strict union of some of them one with another, and the exclusion of others; there are very few of them that we can be sure are or are not inconsistent in nature, any farther than experience and sensible observation reach. Herein, therefore, is founded the reality of our knowledge concerning substances, that all our complex ideas of them must be such, and such only, as are made up of such simple ones as have been discovered to coexist in nature. And our ideas, being thus true, though not perhaps very exact copies, are yet the subjects of real (as far as we have any) knowledge of them: which, as has been already showed, will not be found to reach very far; but so far as it does, it will still be real knowledge. Whatever ideas we have, the agreement we find they have with others will still be knowledge. If those ideas be abstract, it will be

general knowledge. But to make it real concerning substances, the ideas must be taken from the real existence of things. Whatever simple ideas have been found to coexist in any substance, these we may with confidence join together again, and so make abstract ideas of substances. For whatever have once had an union in nature, may be united again.

13. *In our inquiries about substances we must consider ideas, and not confine our thoughts to names or species supposed set out by names.*—This if we rightly consider, and confine not our thoughts and abstract ideas to names, as if there were or could be no other sorts of things than what known names had already determined, and, as it were set out, we should think of things with greater freedom and less confusion than perhaps we do. It would possibly be thought a bold paradox, if not a very dangerous falsehood, if I should say, that some changelings who have lived forty years together without any appearance of reason, are something between a man and a beast: which prejudice is founded upon nothing else but a false supposition, that these two names, man and beast, stand for distinct species so set out by real essences that there can come no other species between them: whereas if we will abstract from those names, and the supposition of such specific essences made by nature, wherein all things of the same denominations did exactly and equally partake; if we would not fancy that there were a certain number of these essences wherein all things, as in moulds, were cast and formed; we should find that the idea of the shape, motion, and life of a man without reason is as much a distinct idea, and makes as much a distinct sort of things from man and beast, as the idea of the shape of an ass with reason would be different from either that of man or beast and be a species of an animal between or distinct from both. . . .

18. *Recapitulation.*—Wherever we perceive the agreement or disagreement of any of our ideas, there is certain knowledge; and wherever we are sure those ideas agree with the reality of things, there is certain real knowledge. Of which agreement of our ideas with the reality of things having here

given the marks, I think I have shown wherein it is that certainty, real certainty, consists. Which, whatever it was to others, was, I confess, to me heretofore one of those *desiderata* which I found great want of.

CHAPTER V

OF TRUTH IN GENERAL

1. *What Truth is.*—What is truth? was an inquiry many ages since; and it being that which all mankind either do, or pretend to search after, it cannot but be worth our while carefully to examine wherein it consists, and so acquaint ourselves with the nature of it as to observe how the mind distinguishes it from falsehood.

2. *A right joining or separating of signs,* i. e., *ideas or words.*—Truth, then, seems to me, in the proper import of the word, to signify nothing but the joining or separating of signs, as the things signified by them do agree or disagree one with another. The joining or separating of signs here meant, is what by another name we call proposition. So that truth properly belongs only to propositions: whereof there are two sorts, viz., mental and verbal; as there are two sorts of signs commonly made use of, viz. ideas and words,

3. *Which make mental or verbal propositions.*—To form a clear notion of truth, it is very necessary to consider truth of thought, and truth of words, distinctly one from another; but yet it is very difficult to treat of them asunder. Because it is unavoidable, in treating of mental propositions, to make use of words; and then the instances given of mental propositions cease immediately to be barely mental, and become verbal. For a mental proposition being nothing but a bare consideration of the ideas, as they are in our minds, stripped of names, they lose the nature of purely mental propositions as soon as they are put into words.

4. *Mental propositions are very hard to be treated of.*— And that which makes it yet harder to treat of mental and verbal propositions separately is, that most men, if not all, in their thinking and reasonings within themselves, make use of words instead of ideas: at least when the subject of their meditation contains in it complex ideas. Which is a great evidence of the imperfection and uncertainty of our ideas of that kind, and may, if attentively made use of, serve for a mark to show us what are those things we have clear and perfect established ideas of, and what not. For if we will curiously observe the way our mind takes in thinking and reasoning, we shall find, I suppose, that when we make any propositions within our own thoughts about white or black, sweet or bitter, a triangle or a circle, we can and often do frame in our minds the ideas themselves, without reflecting on the names. But when we would consider, or make propositions about the more complex ideas, as of a man, vitriol, fortitude, glory, we usually put the name for the idea; because the ideas these names stand for, being for the most part imperfect, confused, and undetermined, we reflect on the names themselves, because they are more clear, certain, and distinct, and readier occur to our thoughts than the pure ideas: and so we make use of these words instead of the ideas themselves, even when we would meditate and reason within ourselves, and make tacit mental propositions. In substances, as has been already noticed, this is occasioned by the imperfection of our ideas; we making the name stand for the real essence, of which we have no idea at all. In modes, it is occasioned by the great number of simple ideas that go to the making them up. For many of them being compounded, the name occurs much easier than the complex idea itself, which requires time and attention to be recollected, and exactly represented to the mind, even in those men who have formerly been at the pains to do it; and is utterly impossible to be done by those who, though they have ready in their memory the greatest part of the common words of that language, yet perhaps never troubled themselves in all their

lives to consider what precise ideas the most of them stood for. Some confused or obscure notions have served their turns, and many who talk very much of religion and conscience, of church and faith, of power and right, of obstructions and humors, melancholy and choler, would perhaps have little left in their thoughts and meditations, if one should desire them to think only of the things themselves, and lay by those words with which they so often confound others, and not seldom themselves also.

5. *Being nothing but the joining or separating ideas without words.*—But to return to the consideration of truth: we must, I say, observe two sorts of propositions that we are capable of making.

First, mental, wherein the ideas in our understandings are without the use of words put together, or separated by the mind, perceiving or judging of their agreement or disagreement.

Secondly, verbal propositions, which are words, the signs of our ideas, put together or separated in affirmative or negative sentences. By which way of affirming or denying, these signs, made by sounds, are, as it were, put together or separated one from another. So that proposition consists in joining or separating signs, and truth consists in the putting together or separating those signs, according as the things which they stand for agree or disagree.

6. *When mental propositions contain real truth, and when verbal.*—Everyone's experience will satisfy him that the mind, either by perceiving or supposing the agreement or disagreement of any of its ideas, does tacitly within itself put them into a kind of proposition affirmative or negative, which I have endeavored to express by the terms putting together and separating. But this action of the mind, which is so familiar to every thinking and reasoning man, is easier to be conceived by reflecting on what passes in us when we affirm or deny, than to be explained by words. When a man has in his head the idea of two lines, viz., the side and diagonal of a square whereof the diagonal is an inch long, he may

have the idea also of the division of that line into a certain number of equal parts; v. g., into five, ten, a hundred, a thousand, or any other number, and may have the idea of that inch line being divisible, or not divisible, into such equal parts, as a certain number of them will be equal to the side-line. Now, whenever he perceives, believes, or supposes such a kind of divisibility to agree or disagree to his idea of that line, he, as it were, joins or separates those two ideas, viz., the idea of that line and the idea of that kind of divisibility; and so makes a mental proposition, which is true or false, according as such a kind of divisibility, a divisibility into such aliquot parts, does really agree to that line or no. When ideas are so put together or separated in the mind as they or the things they stand for do agree or not, that is, as I may call it, mental truth. But truth of words is something more; and that is the affirming or denying of words one of another, as the ideas they stand for agree or disagree; and this again is two-fold: either purely verbal and trifling, which I shall speak of (Chap. viii), or real and instructive, which is the object of that real knowledge which we have spoken of already.

7. *Objection against verbal truth, that thus it may all be chimerical.*—But here again will be apt to occur the same doubt about truth, that did about knowledge: and it will be objected, that if truth be nothing but the joining and separating of words in propositions, as the ideas they stand for agree or disagree in men's minds, the knowledge of truth is not so valuable a thing as it is taken to be, nor worth the pains and time men employ in the search of it; since by this account it amounts to no more than the conformity of words to the chimeras of men's brains. Who knows not what odd notions many men's heads are filled with, and what strange ideas all men's brains are capable of? But if we rest here, we know the truth of nothing by this rule, but of the visionary words in our own imaginations; nor have other truth, but what as much concerns harpies and centaurs, as men and horses. For those, and the like, may be ideas in our heads

and have their agreement or disagreement there, as well as the ideas of real beings, and so have as true propositions made about them. And it will be altogether as true a proposition to say all centaurs are animals, as that all men are animals; and the certainty of one as great as the other. For in both the propositions, the words are put together according to the agreement of the ideas in our minds, and the agreement of the idea of animal with that of centaur is as clear and visible to the mind as the agreement of the idea of animal with that of man; and so these two propositions are equally true, equally certain. But of what use is all such truth to us?

8. *Answered, real truth is about ideas agreeing to things.* —Though what has been said in the foregoing chapter to distinguish real from imaginary knowledge might suffice here, in answer to this doubt, to distinguish real truth from chimerical, or (if you please) barely nominal, they depending both on the same foundation; yet it may not be amiss here again to consider that though our words signify nothing but our ideas, yet being designed by them to signify things, the truth they contain when put into propositions will be only verbal, when they stand for ideas in the mind that have not an agreement with the reality of things. And therefore truth as well as knowledge may well come under the distinction of verbal and real; that being only verbal truth wherein terms are joined according to the agreement or disagreement of the ideas they stand for, without regarding whether our ideas are such as really have, or are capable of having, an existence in nature. But then it is they contain real truth when these signs are joined as our ideas agree, and when our ideas are such as we know are capable of having an existence in nature; which in substances we cannot know but by knowing that such have existed.

9. *Falsehood is the joining of names otherwise than their ideas agree.*—Truth is the marking down in words the agreement or disagreement of ideas as it is. Falsehood is the marking down in words the agreement or disagreement of ideas otherwise than it is. And so far as these ideas, thus

marked by sounds, agree to their archetypes, so far only is the truth real. The knowledge of this truth consists in knowing what ideas the words stand for, and the perception of the agreement or disagreement of those ideas, according as it is marked by those words.

10. *General propositions to be treated of more at large.*—But because words are looked on as the great conduits of truth and knowledge, and that in conveying and receiving of truth, and commonly in reasoning about it, we make use of words and propositions; I shall more at large inquire wherein the certainty of real truths contained in propositions consists, and where it is to be had; and endeavor to show in what sort of universal propositions we are capable of being certain of their real truth or falsehood.

I shall begin with general propositions, as those which most employ our thoughts, and exercise our contemplation. General truths are most looked after by the mind as those that most enlarge our knowledge; and by their comprehensiveness satisfying us at once of many particulars, enlarge our view, and shorten our way to knowledge.

11. *Moral and metaphysical truth.*—Besides truth taken in the strict sense before mentioned, there are other sorts of truths: as, (i) Moral truth, which is speaking of things according to the persuasion of our own minds, though the proposition we speak agree not to the reality of things. (ii) Metaphysical truth, which is nothing but the real existence of things, conformable to the ideas to which we have annexed their names. This, though it seems to consist in the very beings of things, yet, when considered a little nearly, will appear to include a tacit proposition, whereby the mind joins that particular thing to the idea it had before settled with the name to it. But these considerations of truth, either having before taken notice of, or not being much to our present purpose, it may suffice here only to have mentioned them.

CHAPTER VI

OF UNIVERSAL PROPOSITIONS, THEIR TRUTH AND CERTAINTY

1. *Treating of words necessary to knowledge.*—Though the examining and judging of ideas by themselves, their names being quite laid aside, be the best and surest way to clear and distinct knowledge; yet, through the prevailing custom of using sounds for ideas, I think it is very seldom practised. Everyone may observe how common it is for names to be made use of, instead of the ideas themselves, even when men think and reason within their own breasts; especially if the ideas be very complex, and made up of a great collection of simple ones. This makes the consideration of words and propositions so necessary a part of the treatise of knowledge, that it is very hard to speak intelligibly of the one, without explaining the other.

2. *General truths hardly to be understood but in verbal propositions.*—All the knowledge we have, being only of particular or general truths, it is evident that whatever may be done in the former of these, the latter, which is that which with reason is most sought after, can never be well made known, and is very seldom apprehended, but as conceived and expressed in words. It is not, therefore, out of our way in the examination of our knowledge, to inquire into the truth and certainty of universal propositions.

3. *Certainty twofold—of truth and of knowledge.*—But that we may not be misled in this case by that which is the danger everywhere, I mean by the doubtfulness of terms, it is fit to observe that certainty is twofold: certainty of truth and certainty of knowledge. Certainty of truth is when words are so put together in propositions as exactly to express the agreement or disagreement of the ideas they stand for, as really it is. Certainty of knowledge is to perceive the agreement or disagreement of ideas, as expressed in any propos-

tion. This we usually call knowing, or being certain of the truth of any proposition.

4. *No proposition can be known to be true where the essence of each species mentioned is not known.*—Now, because we cannot be certain of the truth of any general proposition unless we know the precise bounds and extent of the species its terms stand for, it is necessary we should know the essence of each species, which is that which constitutes and bounds it. This, in all simple ideas and modes, is not hard to do. For in these the real and nominal essence being the same, or, which is all one, the abstract idea which the general term stands for being the sole essence and boundary that is or can be supposed of the species, there can be no doubt how far the species extends, or what things are comprehended under each term; which, it is evident, are all that have an exact conformity with the idea it stands for, and no other. But in substances wherein a real essence distinct from the nominal is supposed to constitute, determine, and bound the species, the extent of the general word is very uncertain; because, not knowing this real essence, we cannot know what is, or what is not of that species; and, consequently, what may or may not with certainty be affirmed of it. And thus, speaking of a man, or gold, or any other species of natural substances, as supposed constituted by a precise and real essence which nature regularly imparts to every individual of that kind, whereby it is made to be of that species, we cannot be certain of the truth of any affirmation or negation made of it. For man or gold, taken in this sense, and used for species of things constituted by real essences, different from the complex idea in the mind of the speaker, stand for we know not what; and the extent of these species, with such boundaries, are so unknown and undetermined, that it is impossible with any certainty to affirm that all men are rational, or that all gold is yellow. But where the nominal essence is kept to, as the boundary of each species, and men extend the application of any general term no further than to the particular things in which the complex idea it stands for is to be

found, there they are in no danger to mistake the bounds of each species, nor can be in doubt, on this account, whether any proposition be true or not. I have chosen to explain this uncertainty of propositions in this scholastic way, and have made use of the terms of essences, and species, on purpose to show the absurdity and inconvenience there is to think of them as of any other sort of realities, than barely abstract ideas with names to them. To suppose that the species of things are anything but the sorting of them under general names, according as they agree to several abstract ideas, of which we make those names the signs, is to confound truth, and introduce uncertainty into all general propositions that can be made about them. Though therefore these things might, to people not possessed with scholastic learning, be treated of in a better and clearer way; yet those wrong notions of essences or species having got root in most people's minds who have received any tincture from the learning which has prevailed in this part of the world, are to be discovered and removed, to make way for that use of words which should convey certainty with it.

5. *This more particularly concerns substances.*—The names of substances, then, whenever made to stand for species which are supposed to be constituted by real essences which we know not, are not capable to convey certainty to the understanding: of the truth of general propositions made up of such terms we cannot be sure. [The reason whereof is plain: for how can we be sure that this or that quality is in gold, when we know not what is or is not gold? Since in this way of speaking, nothing is gold but what partakes of an essence, which we not knowing cannot know where it is or is not, and so cannot be sure that any parcel of matter in the world is or is not in this sense gold; being incurably ignorant whether it has or has not that which makes anything to be called gold; i. e., that real essence of gold whereof we have no idea at all: this being as impossible for us to know as it is for a blind man to tell in what flower the color of a pansy is or is not to be found, whilst he has no idea of the color of a

pansy at all. Or if we could (which is impossible) certainly know where a real essence, which we know not, is—v. g., in what parcels of matter the real essence of gold is—yet could we not be sure that this or that quality could with truth be affirmed of gold; since it is impossible for us to know that this or that quality or idea has a necessary connection with a real essence of which we have no idea at all, whatever species that supposed real essence may be imagined to constitute.]

6. *The truth of few universal propositions concerning substances is to be known.*—On the other side, the names of substances, when made use of as they should be, for the ideas men have in their minds, though they carry a clear and determinate signification with them, will not yet serve us to make many universal propositions, of whose truth we can be certain. Not because in this use of them we are uncertain what things are signified by them, but because the complex ideas they stand for are such combinations of simple ones as carry not with them any discoverable connection or repugnancy, but with a very few other ideas.

7. *Because coexistence of ideas in few cases is to be known.*—The complex ideas that our names of the species of substances properly stand for, are collections of such qualities as have been observed to coexist in an unknown substratum, which we call substance: but what other qualities necessarily coexist with such combinations, we cannot certainly know, unless we can discover their natural dependence; which, in their primary qualities, we can go but a very little way in; and in all their secondary qualities we can discover no connection at all, for the reasons mentioned, Chap. iii., viz.: (1) Because we know not the real constitutions of substances, on which each secondary quality particularly depends. (2) Did we know that, it would serve us only for experimental (not universal) knowledge, and reach with certainty no further than that bare instance; because our understandings can discover no conceivable connection between any secondary quality and any modification whatsoever of any of the primary ones. And therefore there are very few general propositions to be made

concerning substances which can carry with them undoubted certainty.

8. *Instance in gold.*—All gold is fixed, is a proposition whose truth we cannot be certain of, how universally soever it be believed. For if, according to the useless imagination of the schools, anyone supposes the term gold to stand for a species of things set out by nature, by a real essence belonging to it, it is evident he knows not what particular substances are of that species, and so cannot with certainty affirm anything universally of gold. But if he makes gold stand for a species determined by its nominal essence, let the nominal essence, for example, be the complex idea of a body of a certain yellow color, malleable, fusible, and heavier than any other known; in this proper use of the word gold, there is no difficulty to know what is or is not gold. But yet no other quality can with certainty be universally affirmed or denied of gold, but what hath a discoverable connection or inconsistency with that nominal essence. Fixedness, for example, having no necessary connection that we can discover with the color, weight, or any other simple idea of our complex one, or with the whole combination together; it is impossible that we should certainly know the truth of this proposition, that all gold is fixed.

9. As there is no discoverable connection between fixedness and the color, weight, and other simple ideas of that nominal essence of gold; so if we make our complex idea of gold a body yellow, fusible, ductile, weighty, and fixed, we shall be at the same uncertainty concerning solubility in *aqua regia,* and for the same reason: since we can never, from consideration of the ideas themselves, with certainty affirm or deny of a body whose complex idea is made up of yellow, very weighty, ductile, fusible, and fixed, that it is soluble in *aqua regia;* and so on of the rest of its qualities. I would gladly meet with one general affirmation concerning any quality of gold that anyone can certainly know is true. It will, no doubt, be presently objected, Is not this an universal proposition, "All gold is malleable?" To which I answer, it is a

very certain proposition, if malleableness be a part of the complex idea the word gold stands for. But then here is nothing affirmed of gold but that that sound stands for an idea in which malleableness is contained; and such a sort of truth and certainty as this it is to say a centaur is four-footed. But if malleableness make not a part of the specific essence the name of gold stands for, it is plain, "All gold is malleable," is not a certain proposition. Because, let the complex idea of gold be made up of whichsoever of its other qualities you please, malleableness will not appear to depend on that complex idea, nor follow from any simple one contained in it: the connection that malleableness has (if it has any) with those other qualities being only by the intervention of the real constitution of its insensible parts; which, since we know not, it is impossible we should perceive that connection, unless we could discover that which ties them together.

10. *As far as any such coexistence can be known, so far universal propositions may be certain. But this will go but a little way.* The more, indeed, of these coexisting qualities we unite into one complex idea under one name, the more precise and determinate we make the signification of that word; but never yet make it thereby more capable of universal certainty, in respect of other qualities not contained in our complex idea; since we perceive not their connection or dependence on one another, being ignorant both of that real constitution in which they are all founded, and also how they flow from it. For the chief part of our knowledge concerning substances is not, as in other things, barely of the relation of two ideas that may exist separately; but is of the necessary connection and coexistence of several distinct ideas in the same subject, or of their repugnancy so to coexist. Could we begin at the other end, and discover what it was wherein that color consisted, what made a body lighter or heavier, what texture of parts made it malleable, fusible, and fixed, and fit to be dissolved in this sort of liquor, and not in another—if, I say, we had such an idea as this of bodies, and could perceive wherein all sensible qualities originally consist, and how they

are produced; we might frame such ideas of them as would furnish us with matter of more general knowledge, and enable us to make universal propositions, that should carry general truth and certainty with them. But whilst our complex ideas of the sorts of substances are so remote from that internal real constitution on which their sensible qualities depend, and are made up of nothing but an imperfect collection of those apparent qualities our senses can discover, there can be few general propositions concerning substances of whose real truth we can be certainly assured; since there are but few simple ideas of whose connection and necessary coexistence we can have certain and undoubted knowledge. I imagine, amongst all the secondary qualities of substances, and the powers relating to them, there cannot any two be named whose necessary coexistence or repugnance to coexist, can certainly be known, unless in those of the same sense, which necessarily exclude one another, as I have elsewhere showed. No one, I think, by the color that is in any body, can certainly know what smell, taste, sound, or tangible qualities it has, nor what alterations it is capable to make or receive on or from other bodies. The same may be said of the sound or taste, etc. Our specific names of substances standing for any collections of such ideas, it is not to be wondered that we can with them make very few general propositions of undoubted real certainty. But yet so far as any complex idea of any sort of substances contains in it any simple idea whose necessary coexistence with any other may be discovered, so far universal propositions may with certainty be made concerning it: v. g., could anyone discover a necessary connection between malleableness and the color or weight of gold, or any other part of the complex idea signified by that name, he might make a certain universal proposition concerning gold in this respect; and the real truth of this proposition, that "All gold is malleable," would be as certain as of this, "The three angles of all right-lined triangles are all equal to two right ones."

11. The *qualities which make our complex ideas of substances depend mostly on external, remote, and unperceived*

causes.—Had we such ideas of substances as to know what real constitutions produce those sensible qualities we find in them, and how those qualities flowed from thence, we could, by the specific ideas of their real essences in our own minds, more certainly find out their properties, and discover what qualities they had or had not, than we can now by our senses: and to know the properties of gold, it would be no more necessary that gold should exist, and that we should make experiments upon it, than it is necessary for the knowing the properties of a triangle, that a triangle should exist in any matter, the idea in our minds would serve for the one as well as the other. But we are so far from being admitted into the secrets of nature, that we scarce so much as ever approach the first entrance towards them. For we are wont to consider the substances we meet with, each of them as an entire thing by itself, having all its qualities in itself, and independent of other things; overlooking, for the most part, the operations of those invisible fluids they are encompassed with, and upon whose motions and operations depend the greatest part of those qualities which are taken notice of in them, and are made by us the inherent marks of distinction whereby we know and denominate them. Put a piece of gold anywhere by itself, separate from the reach and influence of all other bodies, it will immediately lose all its color and weight, and perhaps malleableness too; which, for aught I know, would be changed into a perfect friability. Water, in which to us fluidity is an essential quality, left to itself, would cease to be fluid. But if inanimate bodies owe so much of their present state to other bodies without them, that they would not be what they appear to us were those bodies that environ them removed; it is yet more so in vegetables, which are nourished, grow, and produce leaves, flowers, and seeds, in a constant succession. And if we look a little nearer into the state of animals, we shall find that their dependence, as to life, motion, and the most considerable qualities to be observed in them, is so wholly on extrinsical causes and qualities of other bodies, that make no part of them, that they cannot subsist a moment without them:

though yet those bodies on which they depend are little taken notice of, and make no part of the complex ideas we frame of those animals. Take the air but for a minute from the greatest part of living creatures, and they presently lose sense, life, and motion. This the necessity of breathing has forced into our knowledge. But how many other extrinsical and possibly very remote bodies do the springs of these admirable machines depend on, which are not vulgarly observed, or so much as thought on; and how many are there which the severest inquiry can never discover? The inhabitants of this spot of the universe, though removed so many millions of miles from the sun, yet depend so much on the duly tempered motion of particles coming from or agitated by it, that were this earth removed but a small part of the distance out of its present situation, and placed a little further or nearer that source of heat, it is more than probable that the greatest part of the animals in it would immediately perish: since we find them so often destroyed by an excess or defect of the sun's warmth, which an accidental position in some parts of this our little globe exposes them to. The qualities observed in a loadstone must needs have their source far beyond the confines of that body; and the ravage made often on several sorts of animals by invisible causes, the certain death (as we are told) of some of them, by barely passing the line, or, as it is certain of other, by being removed into a neighboring country; evidently show that the concurrence and operations of several bodies, with which they are seldom thought to have anything to do, is absolutely necessary to make them be what they appear to us, and to preserve those qualities by which we know and distinguish them. We are then quite out of the way when we think that things contain within themselves the qualities that appear to us in them; and we in vain search for that constitution within the body of a fly or an elephant upon which depend those qualities and powers we observe in them. For which perhaps, to understand them aright, we ought to look not only beyond this our earth and atmosphere, but even beyond the sun or remotest star our eyes have yet discovered.

For how much the being and operation of particular substances in this our globe depends on causes utterly beyond our view, is impossible for us to determine. We see and perceive some of the motions and grosser operations of things here about us; but whence the streams come that keep all these curious machines in motion and repair, how conveyed and modified, is beyond our notice and apprehension: and the great parts and wheels, as I may so say, of this stupendous structure of the universe, may, for aught we know, have such a connection and dependence in their influences and operations one upon another, that perhaps things in this our mansion would put on quite another face, and cease to be what they are, if some one of the stars or great bodies incomprehensibly remote from us, should cease to be or move as it does. This is certain: things, however absolute and entire they seem in themselves, are but retainers to other parts of nature, for that which they are most taken notice of by us. Their observable qualities, actions, and powers are owing to something without them; and there is not so complete and perfect a part that we know of nature, which does not owe the being it has, and the excellences of it, to its neighbors; and we must not confine our thoughts within the surface of any body, but look a great deal further, to comprehend perfectly those qualities that are in it.

12. If this be so, it is not to be wondered that we have very imperfect ideas of substances, and that the real essences, on which depend their properties and operations, are unknown to us. We cannot discover so much as that size, figure, and texture of their minute and active parts, which is really in them; much less the different motions and impulses made in and upon them by bodies from without, upon which depends, and by which is formed the greatest and most remarkable part of those qualities we observe in them, and of which our complex ideas of them are made up. This consideration alone is enough to put an end to all our hopes of ever having the ideas of their real essences; which whilst we want, the nominal essences we make use of instead of them, will be able to

furnish us but very sparingly with any general knowledge or universal propositions capable of real certainty.

13. *Judgment may reach farther, but that is not knowledge.* —We are not therefore to wonder, if certainty be to be found in very few general propositions made concerning substances: our knowledge of their qualities and properties goes very seldom farther than our senses reach and inform us. Possibly inquisitive and observing men may, by strength of judgment, penetrate farther, and, on probabilities taken from wary observation, and hints well laid together, often guess right at what experience has not yet discovered to them. But this is but guessing still; it amounts only to opinion, and has not that certainty which is requisite to knowledge. For all general knowledge lies only in our own thoughts, and consists barely in the contemplation of our own abstract ideas. Wherever we perceive any agreement or disagreement amongst them, there we have general knowledge; and by putting the names of those ideas together accordingly in propositions, can with certainty pronounce general truths. But because the abstract ideas of substances, for which their specific names stand, whenever they have any distinct and determinate signification, have a discoverable connection or inconsistency with but a very few other ideas, the certainty of universal propositions concerning substances is very narrow and scanty in that part, which is our principal inquiry concerning them; and there are scarce any of the names of substances, let the idea it is applied to be what it will, of which we can generally and with certainty pronounce that it has or has not this or that other quality belonging to it, and constantly coexisting or inconsistent with that idea, wherever it is to be found.

14. *What is requisite for our knowledge of substances.*— Before we can have any tolerable knowledge of this kind, we must first know what changes the primary qualities of one body do regularly produce in the primary qualities of another, and how. Secondly, we must know what primary qualities of any body produce certain sensations or ideas in us. This is in truth no less than to know all the effects of

matter, under its divers modifications of bulk, figure, cohesion of parts, motion and rest; which, I think everybody will allow, is utterly impossible to be known by us without revelation. Nor if it were revealed to us what sort of figure, bulk, and motion of corpuscles would produce in us the sensation of a yellow color, and what sort of figure, bulk, and texture of parts in the superficies of any body were fit to give such corpuscles their due motion to produce that color; would that be enough to make universal propositions with certainty, concerning the several sorts of them, unless we had faculties acute enough to perceive the precise bulk, figure texture, and motion of bodies in those minute parts, by which they operate on our senses, so that we might by those frame our abstract ideas of them. I have mentioned here only corporeal substances, whose operations seem to lie more level to our understandings: for as to the operations of spirits, both their thinking and moving of bodies, we at first sight find ourselves at a loss; though perhaps, when we have applied our thoughts a little nearer to the consideration of bodies and their operations, and examined how far our notions, even in these, reach with any clearness beyond sensible matter of fact, we shall be bound to confess that, even in these too, our discoveries amount to very little beyond perfect ignorance and incapacity.

15. *Whilst our ideas of substances contain not their real constitutions, we can make but few general certain propositions concerning them.*—This is evident, the abstract complex ideas of substances, for which their general names stand, not comprehending their real constitutions, can afford us very little universal certainty. Because our ideas of them are not made up of that on which those qualities we observe in them, and would inform ourselves about, do depend, or with which they have any certain connection: v. g., let the ideas to which we give the name man be, as it commonly is, a body of the ordinary shape, with sense, voluntary motion, and reason joined to it. This being the abstract idea, and consequently the essence of our species, man, we can make but very few general certain propositions concerning man, standing for

such an idea. Because not knowing the real constitution on which sensation, power of motion, and reasoning, with that peculiar shape, depend, and whereby they are united together in the same subject, there are very few other qualities with which we can perceive them to have a necessary connection: and therefore we cannot with certainty affirm that all men sleep by intervals, that no man can be nourished by wood or stones, that all men will be poisoned by hemlock, because these ideas have no connection nor repugnancy with this our nominal essence of man, with this abstract idea that name stands for; we must, in these and the like, appeal to trial in particular subjects, which can reach but a little way. We must content ourselves with probability in the rest; but can have no general certainty, whilst our specific idea of man contains not that real constitution which is the root wherein all his inseparable qualities are united, and from whence they flow. Whilst our idea the word man stands for is only an imperfect collection of some sensible qualities and powers in him, there is no discernible connection or repugnance between our specific idea, and the operation of either the parts of hemlock or stones upon his constitution. There are animals that safely eat hemlock, and others that are nourished by wood and stones; but as long as we want ideas of those real constitutions of different sorts of animals whereon these and the like qualities and powers depend, we must not hope to reach certainty in universal propositions concerning them. Those few ideas only which have a discernible connection with our nominal essence, or any part of it, can afford us such propositions. But these are so few, and of so little moment, that we may justly look on our certain general knowledge of substances as almost none at all.

16. *Wherein lies the general certainty of propositions.*—To conclude: general propositions, of what kind soever, are then only capable of certainty, when the terms used in them stand for such ideas whose agreement or disagreement, as there expressed, is capable to be discovered by us. And we are then certain of their truth or falsehood, when we perceive the

ideas the terms stand for to agree or not agree according as they are affirmed or denied one of another. Whence we may take notice that general certainty is never to be found but in our ideas. Whenever we go to seek it elsewhere, in experiment or observations without us, our knowledge goes not beyond particulars. It is the contemplation of our own abstract ideas that alone is able to afford us general knowledge. . . .

[Chapters VII, "Of Maxims," and VIII, "Of Trifling Propositions," are closely connected with the attack on innate principles in Book I. Maxims, or axioms, "are a sort of propositions," which "have passed for principles of science." Because they are self-evident they have been supposed innate and the foundation of all our other knowledge. Locke proposes, in this chapter, "to enquire into the reason of their evidence, and see whether it be peculiar to them alone, and also examine how far they influence and govern our other knowledge." Since knowledge, for Locke, consists in a perception of the agreement or disagreement of ideas, "where that agreement or disagreement is perceived immediately by itself, without the intervention or help of any other, there our knowledge is self-evident." Self-evidence, therefore, is not peculiar to received axioms.

In respect to the four sorts of agreement and disagreement, Locke shows that as to *identity and diversity,* all propositions are equally self-evident; that in respect to *coexistence,* "or such necessary connection between two ideas, that in the subject where one of them is supposed, there the other must necessarily be also," we have few self-evident propositions; that in the case of *relations of modes* we have many such propositions, as e. g. in mathematics; and, finally, that concerning *real existence,* "since that has no connection with any other of our ideas but that of ourselves and of a First Being, we have in that concerning the real existence of all other beings not so much as demonstrative, much less a self-evident knowledge, and therefore concerning those there are no maxims."

Locke now considers the question how far these received maxims "influence and govern our other knowledge." He states the view he wishes to refute as follows: "The rules established in the Schools, that all reasonings are *ex præcognitis et præconcessis,* seem to lay the foundation of all other knowledge in these max-

ims, and to suppose them to be *præcognita;* whereby, I think, is meant these two things: first, that these axioms are those truths that are first known to the mind; and secondly, that upon them the other parts of our knowledge depend." Locke, as in Book I, again denies both of these assertions as contrary to his plain historical account of the original of our knowledge. Of what use, then, are these general maxims? They are of use, he answers, for systematic exposition, in the ordinary methods of teaching the sciences, though of little or no value in advancing them farther, and they are "of use in disputes, for the silencing of obstinate wranglers, and bringing those contests to some conclusion."

Trifling propositions "are universal propositions which, though they be certainly true, yet they add no light to our understandings, bring no increase to our knowledge." Such are all purely identical propositions, and propositions wherein "a part of the complex idea is predicated of the name of the whole; a part of the definition, of the word defined."

"We can know then the truth of two sorts of propositions with perfect certainty. The one is, of those trifling propositions which have a certainty in them, but it is but a verbal certainty, but not instructive. And secondly, we can know the truth, and so may be certain in propositions which affirm something of another, which is a necessary consequence of its precise complex idea, but not contained in it: as that 'the external angle of all triangles is bigger than either of the opposite internal angles'; which relation of the outward angle to either of the opposite internal angles, making no part of the complex idea signified by the name triangle, this is a real truth, and conveys with it instructive real knowledge."]

CHAPTER IX

OF OUR THREEFOLD KNOWLEDGE OF EXISTENCE

1. *General certain propositions concern not existence.*— Hitherto we have only considered the essences of things, which, being only abstract ideas, and thereby removed in our thoughts from particular existence, (that being the proper

operation of the mind in abstraction, to consider an idea under no other existence but what it has in the understanding), gives us no knowledge of real existence at all. Where by the way, we may take notice that universal propositions, of whose truth or falsehood we can have certain knowledge, concern not existence; and farther, that all particular affirmations or negations that would not be certain if they were made general, are only concerning existence; they declaring only the accidental union or separation of ideas in things existing, which in their abstract natures have no known necessary union or repugnancy.

2. *A threefold knowledge of existence.*—But leaving the nature of propositions, and different ways of predication, to be considered more at large in another place, let us proceed now to inquire concerning our knowledge of the existence of things, and how we come by it. I say then, that we have the knowledge of our own existence by intuition; of the existence of God by demonstration; and of other things by sensation.

3. *Our knowledge of our own existence is intuitive.*—As for our own existence, we perceive it so plainly and so certainly that it neither needs nor is capable of any proof. For nothing can be more evident to us than our own existence. I think, I reason, I feel pleasure and pain: can any of these be more evident to me than my own existence? If I doubt of all other things, that very doubt makes me perceive my own existence, and will not suffer me to doubt of that. For if I know I feel pain, it is evident I have as certain perception of my own existence as of the existence of the pain I feel; or if I know I doubt, I have as certain perception of the existence of the thing doubting, as of that thought which I call doubt. Experience, then, convinces us that we have an intuitive knowledge of our own existence, and an internal infallible perception that we are. In every act of sensation, reasoning, or thinking, we are conscious to ourselves of our own being, and in this matter come not short of the highest degree of certainty.

CHAPTER X

OF OUR KNOWLEDGE OF THE EXISTENCE OF A GOD

1. *We are capable of knowing certainly that there is a God.*—Though God has given us no innate ideas of Himself, though He has stamped no original characters on our minds wherein we may read His being; yet, having furnished us with those faculties our minds are endowed with, He hath not left Himself without witness; since we have sense, perception, and reason, and cannot want a clear proof of Him as long as we carry ourselves about us. Nor can we justly complain of our ignorance in this great point, since He has so plentifully provided us with the means to discover and know Him, so far as is necessary to the end of our being and the great concernment of our happiness. But though this be the most obvious truth that reason discovers, and though its evidence be (if I mistake not) equal to mathematical certainty; yet it requires thought and attention, and the mind must apply itself to a regular deduction of it from some part of our intuitive knowledge, or else we shall be as uncertain and ignorant of this as of other propositions which are in themselves capable of clear demonstration. To show, therefore, that we are capable of knowing, i. e. being certain, that there is a God, and how we may come by this certainty, I think we need go no farther than ourselves, and that undoubted knowledge we have of our own existence.

2. *Man knows that he himself is.*—I think it is beyond question that man has a clear idea of his own being: he knows certainly that he exists, and that he is something. He that can doubt whether he be anything or no, I speak not to; no more than I would argue with pure nothing, or endeavor to convince nonentity that it were something. If anyone pretends to be so skeptical as to deny his own existence (for really to doubt of it is manifestly impossible), let him, for me,

enjoy his beloved happiness of being nothing, until hunger or some other pain convince him of the contrary. This, then, I think I may take for a truth, which everyone's certain knowledge assures him of beyond the liberty of doubting, viz., that he is something that actually exists.

3. *He knows also that nothing cannot produce a being, therefore something eternal.*—In the next place, man knows by an intuitive certainty that bare nothing can no more produce any real being, than it can be equal to two right angles. If a man knows not that nonentity, or the absence of all being, cannot be equal to two right angles, it is impossible he should know any demonstration in Euclid. If therefore we know there is some real being, and that nonentity cannot produce any real being, it is an evident demonstration that from eternity there has been something; since what was not from eternity had a beginning, and what had a beginning must be produced by something else.

4. *That Eternal Being must be most powerful.*—Next, it is evident that what had its being and beginning from another, must also have all that which is in and belongs to its being from another too. All the powers it has, must be owing to and received from the same source. This eternal source, then, of all being must also be the source and original of all power; and so this Eternal Being must be also the most powerful.

5. *And most knowing.*—Again, a man finds in himself perception and knowledge. We have then got one step farther; and we are certain now that there is not only some being, but some knowing, intelligent being in the world. There was a time, then, when there was no knowing being, and when knowledge began to be; or else there has been also a knowing Being from eternity. If it be said, "There was a time when no being had any knowledge, when that Eternal Being was void of all understanding;" I reply that then it was impossible there should ever have been any knowledge; it being as impossible that things wholly void of knowledge, and operating blindly and without any perception, should produce a knowing being, as it is impossible that a triangle should

make itself three angles bigger than two right ones. For it is as repugnant to the idea of senseless matter that it should put into itself sense, perception, and knowledge, as it is repugnant to the idea of a triangle that it should put into itself greater angles than two right ones.

6. *And therefore God.*—Thus from the consideration of ourselves, and what we infallibly find in our own constitutions, our reason leads us to the knowledge of this certain and evident truth, that there is an eternal, most powerful, and most knowing Being; which whether anyone will please to call God, it matters not. The thing is evident; and from this idea duly considered, will easily be deduced all those other attributes which we ought to ascribe to this Eternal Being. [If, nevertheless, anyone should be found so senselessly arrogant as to suppose man alone knowing and wise, but yet the product of mere ignorance and chance, and that all the rest of the universe acted only by that blind haphazard; I shall leave with him that very rational and emphatical rebuke of Tully, Lib. ii. *De Leg.*, to be considered at his leisure: "What can be more sillily arrogant and misbecoming than for a man to think that he has a mind and understanding in him, but yet in all the universe beside there is no such thing? Or that those things which, with the utmost stretch of his reason, he can scarce comprehend, should be moved and managed without any reason at all?" *Quid est enim verius quam neminem esse oportere tam stulte arrogantem, ut in se mentem et rationem putet inesse, in cœlo mundoque non putet? Aut ea quæ vix summa ingenii ratione comprehendat, nulla ratione moveri putet?*]

From what has been said, it is plain to me we have a more certain knowledge of the existence of a God than of anything our senses have not immediately discovered to us. Nay, I presume I may say that we more certainly know that there is a God, than that there is anything else without us. When I say we *know*, I mean there is such a knowledge within our reach which we cannot miss, if we will but apply our minds to that as we do to several other inquiries.

7. *Our idea of a most perfect Being, not the sole proof of a God.*—How far the idea of a most perfect being which a man may frame in his mind, does or does not prove the existence of a God, I will not here examine. For in the different make of men's tempers, and application of their thoughts, some arguments prevail more on one, and some on another, for the confirmation of the same truth. But yet, I think this I may say that it is an ill way of establishing this truth and silencing atheists, to lay the whole stress of so important a point as this upon that sole foundation, and take some men's having that idea of God in their minds (for it is evident some men have none, and some worse than none, and the most very different) for the only proof of a Deity; and out of an overfondness of that darling invention, cashier or at least endeavor to invalidate, all other arguments, and forbid us to hearken to those proofs, as being weak or fallacious, which our own existence and the sensible parts of the universe offer so clearly and cogently to our thoughts, that I deem it impossible for a considering man to withstand them. For I judge it as certain and clear a truth as can any where be delivered, that "the invisible things of God are clearly seen from the creation of the world, being understood by the things that are made, even His eternal power and Godhead." Though our own being furnishes us, as I have shown, with an evident and incontestable proof of a Deity; and I believe nobody can avoid the cogency of it who will but as carefully attend to it as to any other demonstration of so many parts: yet this being so fundamental a truth, and of that consequence that all religion and genuine morality depend thereon, I doubt not but I shall be forgiven by my reader if I go over some parts of this argument again, and enlarge a little more upon them.

8. *Something from eternity.*—There is no truth more evident than that something must be from eternity. I never yet heard of any one so unreasonable, or that could suppose so manifest a contradiction, as a time wherein there was perfectly nothing; this being of all absurdities the greatest, to imagine that pure nothing, the perfect negation

and absence of all beings, should ever produce any real existence.

It being then unavoidable for all rational creatures to conclude that something has existed from eternity, let us next see what kind of thing that must be.

9. *Two sorts of beings cogitative and incogitative.*—There are but two sorts of beings in the world that man knows or conceives:—

First, such as are purely material, without sense, perception, or thought, as the clippings of our beards and parings of our nails.

Secondly, sensible, thinking, perceiving beings, such as we find ourselves to be; which, if you please, we will hereafter call *cogitative* and *incogitative* beings; which, to our present purpose, if for nothing else, are perhaps better terms than material and immaterial.

10. *Incogitative being cannot produce a cogitative.*—If then there must be something eternal, let us see what sort of being it must be. And to that it is very obvious to reason that it must necessarily be a cogitative being. For it is as impossible to conceive that ever bare incogitative matter should produce a thinking intelligent being, as that nothing should of itself produce matter. Let us suppose any parcel of matter eternal, great or small, we shall find it in itself able to produce nothing. For example, let us suppose the matter of the next pebble we meet with, eternal, closely united, and the parts firmly at rest together: if there were no other being in the world, must it not eternally remain so, a dead, inactive lump? Is it possible to conceive it can add motion to itself, being purely matter, or produce anything? Matter, then, by its own strength, cannot produce in itself so much as motion: the motion it has must also be from eternity, or else be produced and added to matter by some other being more powerful than matter; matter, as is evident, having not power to produce motion in itself. But let us suppose motion eternal too; yet matter, incogitative matter and motion, whatever changes it might produce of figure and bulk, could never

produce thought. Knowledge will still be as far beyond the power of motion and matter to produce, as matter is beyond the power of nothing or nonentity to produce. And I appeal to everyone's own thoughts, whether he cannot as easily conceive matter produced by nothing, as thought to be produced by pure matter, when before there was no such thing as thought or an intelligent being existing. Divide matter into as minute parts as you will, which we are apt to imagine a sort of spiritualizing or making a thinking thing of it; vary the figure and motion of it as much as you please; a globe, cube, cone, prism, cylinder, etc., whose diameters are but 100,000th part of a gry,[1] will operate no otherwise upon other bodies of proportionable bulk than those of an inch or foot diameter; and you may as rationally expect to produce sense, thought, and knowledge, by putting together in a certain figure and motion gross particles of matter, as by those that are the very minutest that do any where exist. They knock, impel, and resist one another just as the greater do, and that is all they can do. So that, if we will suppose nothing first or eternal, matter can never begin to be; if we will suppose bare matter without motion, eternal motion can never begin to be; if we suppose only matter and motion first, or eternal, thought can never begin to be. [For it is impossible to conceive that matter, either with or without motion could have originally in and from itself, sense, perception, and knowledge, as is evident from hence, that then sense, perception, and knowledge must be a property eternally inseparable from matter and every particle of it. Not to add that though our general or specific conception of matter makes us speak of it as one thing, yet really all matter is not one individual thing, neither is

[1]A gry is one-tenth of a line, a line one-tenth of an inch, an inch one-tenth of a philosophical foot, a philosophical foot one-third of a pendulum, whose diadroms, in the latitude of forty-five degrees, are each equal to one second of time, or one-sixtieth of a minute. I have affectedly made use of this measure here, and the parts of it, under a decimal division, with names to them; because I think it would be of general convenience that this should be the common measure in the commonwealth of letters.

there any such thing existing as one material being, or one single body, that we know or can conceive. And therefore, if matter were the eternal first cogitative being, there would not be one eternal infinite cogitative being, but an infinite number of eternal finite cogitative beings independent one of another, of limited force and distinct thoughts, which could never produce that order, harmony, and beauty, which are to be found in nature. Since, therefore, whatsoever is the first eternal being must necessarily be cogitative; and] whatsoever is first of all things must necessarily contain in it, and actually have, at least, all the perfections that can ever after exist; nor can it ever give to another any perfection that it hath not, either actually in itself or at least in a higher degree; [it necessarily follows that the first eternal being cannot be matter.]

11. *Therefore there has been an eternal wisdom.*—If, therefore, it be evident that something necessarily must exist from eternity, it is also as evident that that something must necessarily be a cogitative being; for it is as impossible that incogitative matter should produce a cogitative being, as that nothing, or the negation of all being, should produce a positive being or matter. . . .

CHAPTER XI

OF OUR KNOWLEDGE OF THE EXISTENCE OF OTHER THINGS

1. *It is to be had only by sensation.*—The knowledge of our own being we have by intuition. The existence of a God reason clearly makes known to us, as has been shown.

The knowledge of the existence of any other thing, we can have only by sensation: for, there being no necessary connection of real existence with any idea a man hath in his memory, nor of any other existence but that of God with the existence of any particular man, no particular man can know the existence of any other being, but only when by actual oper-

ating upon him it makes itself perceived by him. For, the having the idea of anything in our mind no more proves the existence of that thing than the picture of a man evidences his being in the world, or the visions of a dream make thereby a true history.

2. *Instance: whiteness of this paper.*—It is therefore the actual receiving of ideas from without that gives us notice of the existence of other things, and makes us know that something doth exist at that time without us which causes that idea in us, though perhaps we neither know nor consider how it does it; for it takes not from the certainty of our senses, and the ideas we receive by them, that we know not the manner wherein they are produced: v. g., whilst I write this, I have, by the paper affecting my eyes, that idea produced in my mind which whatever object causes, I call white; by which I know that that quality or accident (i. e., whose appearance before my eyes always causes that idea) doth really exist and hath a being without me. And of this the greatest assurance I can possibly have, and to which my faculties can attain, is the testimony of my eyes, which are the proper and sole judges of this thing; whose testimony I have reason to rely on as so certain that I can no more doubt, whilst I write this, that I see white and black, and that something really exists that causes that sensation in me, than that I write or move my hand; which is a certainty as great as human nature is capable of concerning the existence of anything but a man's self alone and of God.

3. *This, though not so certain as demonstration, yet may be called knowledge, and proves the existence of things without us.*—The notice we have by our senses of the existing of things without us, though it be not altogether so certain as our intuitive knowledge, or the deductions of our reason employed about the clear abstract ideas of our own minds; yet it is an assurance that deserves the name of knowledge. If we persuade ourselves that our faculties act and inform us right concerning the existence of those objects that affect them, it cannot pass for an ill-grounded confidence: for I

think nobody can, in earnest, be so skeptical as to be uncertain of the existence of those things which he sees and feels. At least, he that can doubt so far (whatever he may have with his own thoughts) will never have any controversy with me; since he can never be sure I say anything contrary to his own opinion. As to myself, I think God has given me assurance enough of the existence of things without me; since, by their different application, I can produce in myself both pleasure and pain, which is one great concernment of my present state. This is certain, the confidence that our faculties do not herein deceive us is the greatest assurance we are capable of concerning the existence of material beings. For we cannot act anything but by our faculties, nor talk of knowledge itself but by the help of those faculties which are fitted to apprehend even what knowledge is. But, besides the assurance we have from our senses themselves, that they do not err in the information they give us of the existence of things without us when they are affected by them, we are farther confirmed in this assurance by other concurrent reasons.

4. (i) *Because we cannot have them but by the inlet of the senses.*—First, it is plain those perceptions are produced in us by exterior causes affecting our senses, because those that want the organs of any sense never can have the ideas belonging to that sense produced in their minds. This is too evident to be doubted; and therefore we cannot but be assured that they come in by the organs of that sense, and no other way. The organs themselves, it is plain, do not produce them; for then the eyes of a man in the dark would produce colors, and his nose smell roses in the winter: but we see nobody gets the relish of a pineapple till he goes to the Indies where it is, and tastes it.

5. (ii) *Because an idea from actual sensation and another from memory are very distinct perceptions.*—Secondly, because sometimes I find that I cannot avoid the having those ideas produced in my mind: for though when my eyes are shut, or windows fast, I can at pleasure recall to my mind the ideas of light or the sun, which former sensations had lodged in my

memory; so I can at pleasure lay by that idea, and take into my view that of the smell of a rose, or taste of sugar. But if I turn my eyes at noon towards the sun, I cannot avoid the ideas which the light or sun then produces in me. So that there is a manifest difference between the ideas laid up in my memory (over which, if they were there only, I should have constantly the same power to dispose of them, and lay them by at pleasure), and those which force themselves upon me and I cannot avoid having. And therefore it must needs be some exterior cause, and the brisk acting of some objects without me, whose efficacy I cannot resist, that produces those ideas in my mind, whether I will or no. Besides, there is nobody who doth not perceive the difference in himself between contemplating the sun as he hath the idea of it in his memory, and actually looking upon it: of which two his perception is so distinct, that few of his ideas are more distinguishable one from another. And therefore he hath certain knowledge that they are not both memory, or the actions of his mind and fancies only within him; but that actual seeing hath a cause without.

6. (iii) *Pleasure or pain, which accompanies actual sensation, accompanies not the returning of those ideas without the external objects.*—Thirdly, add to this, that many of those ideas are produced in us with pain, which afterwards we remember without the least offence. Thus the pain of heat or cold, when the idea of it is revived in our minds, gives us no disturbance; which, when felt, was very troublesome, and is again when actually repeated; which is occasioned by the disorder the external object causes in our bodies when applied to them. And we remember the pain of hunger, thirst, or the headache, without any pain at all; which would either never disturb us, or else constantly do it as often as we thought of it, were there nothing more but ideas floating in our minds, and appearances entertaining our fancies, without the real existence of things affecting us from abroad. The same may be said of pleasure accompanying several actual sensations; and, though mathematical demonstration depends not upon

sense, yet the examining them by diagrams gives great credit to the evidence of our sight, and seems to give it a certainty approaching to that of demonstration itself. For it would be very strange that a man should allow it for an undeniable truth, that two angles of a figure which he measures by lines and angles of a diagram, should be bigger one than the other, and yet doubt of the existence of those lines and angles which, by looking on, he makes use of to measure that by.

7. (iv) *Our senses assist one another's testimony of the existence of outward things.*—Fourthly, our senses, in many cases, bear witness to the truth of each other's report concerning the existence of sensible things without us. He that sees a fire may, if he doubt whether it be anything more than a bare fancy, feel it too, and be convinced by putting his hand in it; which certainly could never be put into such exquisite pain by a bare idea or phantom, unless that the pain be a fancy too: which yet he cannot, when the burn is well, by raising the idea of it, bring upon himself again.

Thus I see, whilst I write this, I can change the appearance of the paper; and, by designing the letters, tell beforehand what new idea it shall exhibit the very next moment, by barely drawing my pen over it; which will neither appear (let me fancy as much as I will) if my hand stand still, or though I move my pen, if my eyes be shut; nor, when those characters are once made on the paper, can I choose afterwards but see them as they are—that is, have the ideas of such letters as I have made. Whence it is manifest that they are not barely the sport and play of my own imagination, when I find that the characters that were made at the pleasure of my own thoughts do not obey them; nor yet cease to be, whenever I shall fancy it, but continue to affect my senses constantly and regularly, according to the figures I made them. To which if we will add that the sight of those shall, from another man, draw such sounds as I beforehand design they shall stand for, there will be little reason left to doubt that those words I write do really exist without me, when they cause a long series of regular sounds to affect my ears, which

could not be the effect of my imagination, nor could my memory retain them in that order.

8. *This certainty is as great as our condition needs.*—But yet, if after all this anyone will be so skeptical as to distrust his senses, and to affirm that all we see and hear, feel and taste, think and do, during our whole being, is but the series and deluding appearances of a long dream whereof there is no reality, and therefore will question the existence of all things or our knowledge of anything; I must desire him to consider that if all be a dream, then he doth but dream that he makes the question; and so it is not much matter that a waking man should answer him. But yet, if he pleases, he may dream that I make him this answer, that the certainty of things existing in *rerum natura,* when we have the testimony of our senses for it, is not only as great as our frame can attain to, but as our condition needs. For, our faculties being suited not to the full extent of being, nor to a perfect, clear, comprehensive knowledge of things free from all doubt and scruple, but to the preservation of us, in whom they are, and accommodated to the use of life, they serve to our purpose well enough, if they will but give us certain notice of those things which are convenient or inconvenient to us. For he that sees a candle burning, and hath experimented the force of its flame by putting his finger in it, will little doubt that this is something existing without him, which does him harm and puts him to great pain; which is assurance enough, when no man requires greater certainty to govern his actions by than what is as certain as his actions themselves. And if our dreamer pleases to try whether the glowing heat of a glass furnace be barely a wandering imagination in a drowsy man's fancy, by putting his hand into it, he may perhaps be awakened into a certainty greater than he could wish, that it is something more than bare imagination. So that this evidence is as great as we can desire, being as certain to us as our pleasure or pain, i. e., happiness or misery; beyond which we have no concernment either of knowing or being. Such an assurance of the existence of things without us, is sufficient to direct us in

the attaining the good and avoiding the evil which is caused by them, which is the important concernment we have of being made acquainted with them.

9. *But reaches no farther than actual sensation.*—In fine, then, when our senses do actually convey into our understandings any idea, we cannot but be satisfied that there doth something at that time really exist without us which doth affect our senses, and by them give notice of itself to our apprehensive faculties, and actually produce that idea which we then perceive; and we cannot so far distrust their testimony as to doubt that such collections of simple ideas as we have observed by our senses to be united together, do really exist together. But this knowledge extends as far as the present testimony of our senses, employed about particular objects that do then affect them, and no farther. For if I saw such a collection of simple ideas as is wont to be called man existing together one minute since, and am now alone, I cannot be certain that the same man exists now, since there is no necessary connection of his existence a minute since with his existence now: by a thousand ways he may cease to be, since I had the testimony of my senses for his existence. And if I cannot be certain that the man I saw last today is now in being, I can less be certain that he is so who hath been longer removed from my senses, and I have not seen since yesterday, or since the last year; and much less can I be certain of the existence of men that I never saw. And therefore, though it be highly probable that millions of men do now exist, yet, whilst I am alone writing this, I have not that certainty of it which we strictly call knowledge; though the great likelihood of it puts me past doubt, and it be reasonable for me to do several things upon the confidence that there are men (and men also of my acquaintance, with whom I have to do) now in the world: but this is but probability, not knowledge.

10. *Folly to expect demonstration in everything.*—Whereby yet we may observe how foolish and vain a thing it is for a man of a narrow knowledge, who having reason given him to judge of the different evidence and probability of things, and

to be swayed accordingly; how vain, I say, it is to expect demonstration and certainty in things not capable of it, and refuse assent to very rational propositions, and act contrary to very plain and clear truths, because they cannot be made out so evident as to surmount every the least (I will not say reason, but) pretence of doubting. He that in the ordinary affairs of life would admit of nothing but direct plain demonstration, would be sure of nothing in this world but of perishing quickly. The wholesomeness of his meat or drink would not give him reason to venture on it: and I would fain know what it is he could do upon such grounds as were capable of no doubt, no objection.

11. *Past existence is known by memory.*—As, when our senses are actually employed about any object, we do know that it does exist, so by our memory we may be assured that heretofore things that affected our senses have existed. And thus we have knowledge of the past existence of several things, whereof our senses having informed us, our memories still retain the ideas; and of this we are past all doubt so long as we remember well. But this knowledge also reaches no farther than our senses have formerly assured us. Thus, seeing water at this instant, it is an unquestionable truth to me that water doth exist; and remembering that I saw it yesterday, it will also be always true, and, as long as my memory retains it, always an undoubted proposition to me, that water did exist the 10th of July 1688, as it will also be equally true that a certain number of very fine colors did exist, which at the same time I saw upon a bubble of that water: but being now quite out of sight both of the water and bubbles too, it is no more certainly known to me that the water doth now exist than that the bubbles or colors therein do so; it being no more necessary that water should exist today because it existed yesterday, than that the colors or bubbles exist today because they existed yesterday, though it be exceedingly much more probable, because water hath been observed to continue long in existence, but bubbles and the colors on them quickly cease to be.

12. *The existence of spirits not knowable.*—What ideas we have of spirits, and how we come by them, I have already shown. But though we have those ideas in our minds, and know we have them there, the having the ideas of spirits does not make us know that any such things do exist without us, or that there are any finite spirits, or any other spiritual beings but the Eternal God. We have ground from revelation, and several other reasons, to believe with assurance that there are such creatures; but, our senses not being able to discover them, we want the means of knowing their particular existences. For we can no more know that there are finite spirits really existing by the idea we have of such beings in our minds, than by the ideas anyone has of fairies or centaurs he can come to know that things answering those ideas do really exist.

And therefore concerning the existence of finite spirits, as well as several other things, we must content ourselves with the evidence of faith; but universal certain propositions concerning this matter are beyond our reach. For, however true it may be, v. g., that all the intelligent spirits that God ever created do still exist, yet it can never make a part of our certain knowledge. These and the like propositions we may assent to as highly probable, but are not, I fear, in this state capable of knowing. We are not, then, to put others upon demonstrating, nor ourselves upon search of, universal certainty in all those matters wherein we are not capable of any other knowledge but what our senses give us in this or that particular.

13. *Particular propositions concerning existences are knowable.*—By which it appears that there are two sorts of propositions. (1) There is one sort of propositions concerning the existence of anything answerable to such an idea: as, having the idea of an elephant, phœnix, motion, or an angel in my mind, the first and natural inquiry is, whether such a thing does any where exist. And this knowledge is only of particulars. No existence of anything without us, but only of God, can certainly be known farther than our senses in-

form us. (2) There is another sort of propositions, wherein is expressed the agreement or disagreement of our abstract ideas, and their dependence one on another. Such propositions may be universal and certain. So having the idea of God and myself, of fear and obedience, I cannot but be sure that God is to be feared and obeyed by me; and this proposition will be certain concerning man in general, if I have made an abstract idea of such a species whereof I am one particular. But yet this proposition, how certain soever, that men ought to fear and obey God, proves not to me the existence of men in the world, but will be true of all such creatures whenever they do exist: which certainty of such general propositions depends on the agreement or disagreement to be discovered in those abstract ideas.

14. *And general propositions concerning abstract ideas.*— In the former case, our knowledge is the consequence of the existence of things producing ideas in our minds by our senses; in the latter, knowledge is the consequence of the ideas (be they what they will) that are in our minds, producing their general certain propositions. Many of these are called *æternæ veritates,* and all of them indeed are so; not from being written all or any of them in the minds of all men, or that they were any of them propositions in any one's mind till he, having got the abstract ideas, joined or separated them by affirmation or negation. But wheresoever we can suppose such a creature as man is, endowed with such faculties, and thereby furnished with such ideas as we have, we must conclude he must needs, when he applies his thoughts to the consideration of his ideas, know the truth of certain propositions that will arise from the agreement or disagreement which he will perceive in his own ideas. Such propositions are therefore called eternal truths, not because they are eternal propositions actually formed, and antecedent to the understanding that at any time makes them; nor because they are imprinted on the mind from any patterns that are any where of them out of the mind, and existed before; but because, being once made about abstract ideas so as to be true, they will, whenever

they can be supposed to be made again at any time past or to come, by a mind having those ideas, always actually be true. For, names being supposed to stand perpetually for the same ideas, and the same ideas having immutably the same habitudes one to another, propositions concerning any abstract ideas that are once true must needs be eternal verities. . . .

[In the next chapter, "Of the Improvement of Our Knowledge," Locke draws his practical conclusions.

Knowledge (as he has shown in Chap. VII) is not from maxims, but from the comparing of clear and distinct ideas. Therefore the true method of advancing knowledge is by considering our abstract ideas. But in "our search after the knowledge of *substances* our want of ideas that are suitable to such a way of proceeding obliges us to a quite different method. We advance not here, as in the other (where our abstract ideas are real as well as nominal essences), by contemplating our ideas, and considering their relations and correspondences. The want of ideas of their real essences sends us from our own thoughts to the things themselves as they exist. *Experience here must teach me* what reason cannot . . ." This method of experience can procure us convenience, but will not produce true science. "I deny not but a man accustomed to rational and regular experiments shall be able to see farther into the nature of bodies, and guess righter at their yet unknown properties, than one that is a stranger to them; but yet, as I have said, this is but judgment and opinion, not knowledge and certainty. This way of getting and improving our knowledge in substances only by experience and history, which is all that the weakness of our faculties in this state of mediocrity which we are in in this world can attain to, makes me suspect that natural philosophy is not capable of being made a science. We are able, I imagine, to reach very little general knowledge concerning the species of bodies and their several properties. Experiments and historical observations we may have, from which we may draw advantages of ease and health, and thereby increase our stock of conveniences for this life; but beyond this I fear our talents reach not, nor are our faculties, as I guess, able to advance.

"From whence it is obvious to conclude, that since our faculties are not fitted to penetrate into the internal fabric and real essences of bodies, but yet plainly discover to us the being of a God, and

the knowledge of ourselves, enough to lead us into a full and clear discovery of our duty and great concernment; it will become us, as rational creatures, to employ those faculties we have about what they are most adapted to, and follow the direction of nature, where it seems to point us out the way. For it is rational to conclude that our proper employment lies in those enquiries, and in that sort of knowledge which is most suited to our natural capacities, and carries in it our greatest interest, i.e., the condition of our eternal estate. Hence I think I may conclude that *morality is the proper science and business of mankind in general.*" Locke terminates the chapter with some brief advice on the use and abuse of hypothesis in the experimental investigation of nature.

The brief chapter XIII, "Some Further Considerations Concerning Our Knowledge," is not sufficiently important to warrant a summary.

Locke is now ready to turn to his final topic, "the grounds and degrees of belief, opinion, and assent." Chapters XIV–XX treat "Of Judgment," "Of Probability," "Of the Degrees of Assent," "Of Reason," "Of Faith and Reason, and Their Distinct Provinces," "Of Enthusiasm," and "Of Wrong Assent, or Error."

The chief practical conclusion from the precedent discussion is that our knowledge, though sufficient for our estate, extends in most things but a little way. "Therefore, as God has set some things in broad daylight; as He has given us some certain knowledge, though limited to a few things in comparison, probably, as a taste of what intellectual creatures are capable of, to excite in us a desire and endeavor after a better state: so in the greatest part of our concernment, He has afforded us only the twilight, as I may so say, of *probability,* suitable, I presume, to that state of mediocrity and probationership He has been pleased to place us in here . . . Thus the mind has two faculties conversant about truth and falsehood:

"First, *knowledge,* whereby it certainly perceives, and is undoubtedly satisfied of the agreement or disagreement of any ideas.

"Secondly, *judgment,* which is the putting ideas together, or separating them from one another in the mind, when their certain agreement or disagreement is not perceived, but *presumed* to be so; which is, as the word imports, taken to be so before it certainly appears. And if it so unites or separates them as in reality things are, it is right judgment."

'Judgment,' then, is concerned with the determination of prob-

ability. Locke now proceeds (Chap. XV) to define probable reasoning, as distinguished from demonstration: "As demonstration is the showing the agreement or disagreement of two ideas by the intervention of one or more proofs, which have a constant, immutable, and visible connection one with another; so probability is nothing but the appearance of such an agreement or disagreement by the intervention of proofs, whose connection is not constant and immutable, or at least is not perceived to be so; but is, or appears for the most part to be so, and is enough to induce the mind to judge the proposition to be true or false, rather than the contrary." He next discusses "the several degrees and grounds of probability, and assent or faith." The grounds of probability are two:

"First, the conformity of anything with our own knowledge, observation, and experience.

"Secondly, the testimony of others, vouching their observation and experience. In the testimony of others is to be considered: (1) The number. (2) The integrity. (3) The skill of the witnesses. (4) The design of the author, where it is a testimony out of a book cited. (5) The consistency of the parts and circumstances of the relation. (6) Contrary testimonies."

Locke first distinguishes (Chap. XVI) three degrees of probability which command ready assent: "The first and *highest degree of probability* is, when the general consent of all men in all ages, as far as it can be known, concurs with a man's constant and never-failing experience in like cases, to confirm the truth of any particular matter of fact attested by fair witnesses: such are all the stated constitutions and properties of bodies, and the regular proceedings of causes and effects in the ordinary course of nature. This we call an argument from the nature of things themselves. For what our own and other men's constant observations has found always to be after the same manner, that we with reason conclude to be the effects of steady and regular causes, though they come not within the reach of our knowledge. These *probabilities* rise so near to *certainty,* that they govern our thoughts as absolutely, and influence all our actions as fully, as the most evident demonstration; and in what concerns us, we make little or no difference between them and certain knowledge. Our belief thus grounded rises to *assurance.*

"Secondly, the next degree of probability is, when I find by my own experience, and the agreement of all others that mention it,

a thing to be for the most part so, and that the particular instance of it is attested by many and undoubted witnesses: v. g., history giving us such an account of men in all ages, and my own experience, as far as I had an opportunity to observe, confirming it, that most men prefer their private advantage to the public. If all historians that write of Tiberius say that Tiberius did so, it is extremely probable. And in this case, our assent has a sufficient foundation to raise itself to a degree which we may call *confidence*.

"Thirdly, in things that happen indifferently, as that a bird should fly this or that way; that it should thunder on a man's right or left hand, etc., when any particular matter of fact is vouched by the concurrent testimony of unsuspected witnesses, there our assent is also unavoidable."

"Thus far," he adds, "the matter goes easy enough. Probability upon such grounds carries so much evidence with it, that it naturally determines the judgment, and leaves us as little liberty to believe or disbelieve, as a demonstration does whether we will know or be ignorant. The difficulty is when testimonies contradict common experience, and the reports of history and witnesses clash with the ordinary course of nature, or with one another. This only may be said in general, that as the arguments and proofs, *pro* and *con*, upon due examination, nicely weighing every particular circumstance, shall to anyone appear upon the whole matter, in a greater or less degree, to preponderate on either side; so they are fitted to produce in the mind such different entertainment as we call *belief, conjecture, guess, doubt, wavering, distrust, disbelief*, etc." The basic rule to be observed here is that the farther any testimony be removed from its original source the less force and proof it has. "So that, in traditional truths, each remove weakens the force of the proof." Nothing is more false than the common view that opinions "gain force by growing older." On such grounds "propositions, evidently false or doubtful enough in their first beginning, come, by an inverted rule of probability, to pass for authentic truths." But in fact, "no probability can arise higher than its first original."

There is however "one case wherein the strangeness of the fact lessens not the assent to a fair testimony given of it . . . This is the proper case of *miracles*, which, well attested, do not only find credit themselves, but give it also to other truths which need such confirmation." And there is "one sort of propositions that chal-

lenge the highest degree of our assent, upon bare testimony, whether the thing proposed agree or disagree with common experience and the ordinary course of things or no. The reason whereof is, because the testimony is of such an one as cannot deceive nor be deceived, and that is of God Himself. This carries with it assurance beyond doubt, evidence beyond exception. This is called by a peculiar name *revelation,* and our assent to it, *faith;* which as absolutely determines our minds and as perfectly excludes all wavering, as our knowledge itself; and we may as well doubt of our own being, as we can whether any revelation from God be true. So that faith is a settled and sure principle of assent and assurance, and leaves no manner of room for doubt or hesitation. Only we must be sure that it be a divine revelation, and that we understand it right: else we shall expose ourselves to all the extravagancy of enthusiasm, and all the error of wrong principles, if we have faith and assurance in what is not divine revelation. And therefore in those cases, our assent can be rationally no higher than the evidence of its being a revelation, and that this is the meaning of the expressions it is delivered in. If the evidence of its being a revelation, or that this is its true sense, be only on probable proofs, our assent can reach no higher than an assurance or diffidence, arising from the more or less apparent probability of the proofs. But of faith, and the precedency it ought to have before other arguments of persuasion, I shall speak more hereafter, where I treat of it as it is ordinarily placed, in contradistinction to reason; though, in truth, it be nothing else but an assent founded on the highest reason."

In the next two chapters (XVII–XVIII) Locke develops this view of the relation of faith to reason. It is the function of reason both to enlarge our knowledge and regulate our assent. "Sense and intuition reach but a very little way. The greatest part of our knowledge depends upon deductions and intermediate ideas; and in those cases where we are fain to substitute assent instead of knowledge, and take propositions for true without being certain they are so, we have need to find out, examine, and compare the grounds of their probability. In both these cases the faculty which finds out the means, and rightly applies them to discover certainty in the one, and probability in the other, is that which we call reason."

Here Locke digresses (§ 4–8) into a criticism of the view that the syllogism is the natural mode of reasoning. This attack on

the syllogism is part of the negative argument against 'innate ideas' and 'received maxims' which keeps recurring throughout the *Essay*. His principal point is that this "way of reasoning discovers no new proofs, but is the art of marshalling and ranging old ones we have already . . . A man knows first, and then he is able to prove syllogistically. So that syllogism comes after knowledge, and then a man has little or no need of it." Locke also notices "one manifest mistake in the rules of syllogism: viz., that no syllogistical reasoning can be right or conclusive but what has at least one *general* proposition in it. As if we could not reason, and have knowledge about particulars: whereas, in truth, the matter rightly considered, the immediate object of all our reasoning and knowledge, is nothing but particulars. Every man's reasoning and knowledge is only about the ideas existing in his own mind; which are truly, every one of them, particular existences: and our knowledge and reason about other things is only as they correspond with those our particular ideas. So that the perception of the agreement or disagreement of our particular ideas, is the whole and utmost of all our knowledge. Universality is but accidental to it, and consists only in this, that the particular ideas about which it is are such as more than one particular thing can correspond with and be represented by. But the perception of the agreement or disagreement of [any two ideas], and consequently our knowledge, is equally clear and certain, whether either, or both, or neither of those ideas, be capable of representing more real beings than one, or no."

Locke now returns to the original question: "By what has been before said of reason, we may be able to make some guess at the distinction of things, into those that are according to, above, and contrary to reason. (1) *According to reason* are such propositions whose truth we can discover by examining and tracing those ideas we have from sensation and reflection, and by natural deduction find to be true or probable. (2) *Above reason* are such propositions whose truth or probability we cannot by reason derive from those principles. (3) *Contrary to reason* are such propositions as are inconsistent with or irreconcilable to our clear and distinct ideas. Thus the existence of one God is according to reason; the existence of more than one God is contrary to reason; the resurrection of the dead above reason." Reason, in the proper sense of that term, cannot, then, be opposed to faith, for "faith is nothing but a firm assent of the mind; which if it be regulated, as is our

duty, cannot be afforded to anything but upon good reason, and so cannot be opposite to it. He that believes, without having any reason for believing, may be in love with his own fancies; but neither seeks truth as he ought, nor pays the obedience due to his Maker, who would have him use those discerning faculties He has given him, to keep him out of mistake and error." Though revelation "where God has been pleased to give it, *must carry it against the probable conjectures of reason,*" yet "it still belongs to reason to judge of the truth of its being a revelation, and of the signification of the words wherein it is delivered . . . And therefore *nothing that is contrary to, and inconsistent with, the clear and self-evident dictates of reason, has a right to be urged or assented to, as a matter of faith, wherein reason hath nothing to do.*"

In Chap. XIX, "Of Enthusiasm," added in the fourth edition, Locke reverts again to the negative side of his argument. He proposes in this chapter "to consider a third ground of assent, which, with some men, has the same authority, and is as confidently relied on, as either faith or reason: I mean *enthusiasm,* which, laying by reason, would set up revelation without it. Whereby in effect it takes away both reason and revelation, and substitutes in the room of it the ungrounded fancies of a man's own brain, and assumes them for a foundation both of opinion and conduct. *Reason* is natural *revelation,* whereby the eternal Father of light, and Fountain of all knowledge, communicates to mankind that portion of truth which He has laid within the reach of their natural faculties. *Revelation* is natural *reason* enlarged by a new set of discoveries communicated by God immediately, which reason vouches the truth of, by the testimony and proofs it gives that they come from God. So that he that takes away reason to make way for revelation, puts out the light of both; and does much-what the same as if he would persuade a man to put out his eyes, the better to receive the remote light of an invisible star by a telescope."

Finally (Chap. XX) Locke discusses the causes of wrong assent, or error. These he reduces to four: "(1) *Want of proofs.* (2) *Want of ability to use them.* (3) *Want of will to use them.* (4) *Wrong measures of probability.*"

The *Essay* closes with a brief chapter, "Of the Division of the Sciences." Locke makes three basic divisions in our knowledge: Physics, Ethics, and Logic. "This seems to me the first and most

general, as well as natural division of the objects of our understanding. For a man can employ his thoughts about nothing but, either the contemplation of things themselves, for the discovery of truth; or about the things in his own power, which are his own actions, for the attainment of his own ends; or the signs the mind makes use of, both in the one and the other, and the right ordering of them for its clearer information. All which three—viz., *things,* as they are in themselves knowable; *actions,* as they depend on us in order to happiness; and the right use of *signs* in order to knowledge—being *toto caelo* different, they seemed to me to be the three great provinces of the intellectual world, wholly separate and distinct one from another."]

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